

## PLANTAE PAPUANAE ARCHBOLDIANAE, II\*

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*With one plate*

SINCE the publication of our first paper in this series, the choice and ample collections of the third Richard Archbold Expedition (Indisch-Amerikaansche Expeditie) have been arranged for study. Unfortunately, owing to the present war situation, we are unable to distribute the families set apart for study by specialists abroad. In continuing our work of identifying the miscellany, we must, of necessity, leave many points in doubt, to be settled later by comparison with the types and diverse collections showing something of the variation and limits of species.

## PANDANACEAE

## FREYCINETIA Gaudichaud

**Freycinetia angustissima** Ridley, Jour. Bot. **24**: 359. 1886; Martelli, Webbia **3**: 309. 1910.

*Freycinetia stenophylla* Warburg in K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee Nachtr. 53. 1905; Martelli, Webbia **3**: 315. 1910, Jour. Arnold Arb. **10**: 137. 1929; White, Jour. Arnold Arb. **10**: 201. 1929; Merr. & Perry, Jour. Arnold Arb. **20**: 141. 1939.

*Freycinetia polyclada* Merr. & Perry, Jour. Arnold Arb. **20**: 141. 1939.

BRITISH NEW GUINEA: *Brass* 4961 (TYPE of *F. polyclada*), 5300, 6720, 6929, 7124. NETHERLANDS NEW GUINEA: Hollandia, *Brass* 8828, 8874, alt. 50 m., common in rain-forest undergrowth; 4 km. southwest of Bernhard Camp, Idenburg River, *Brass* 13642, alt. 850 m., abundant in the rain-forest of the river flood-plains (climbing shrub with slender radiating branches, ascending to 6–7 m.).

The photograph of the type of *Freycinetia angustissima* Ridley, received through the courtesy of Dr. J. Ramsbottom of the British Museum, shows the infructescence of this species in various stages of development. We are convinced that our *F. polyclada* is identical with this and must be reduced to synonymy. Mr. L. J. Brass who collected

\*Botanical Results of the Richard Archbold Expeditions. See Jour. Arnold Arb. **20**: 324–345. 1939 for part one.



the type-material suggested that the very short leaves as well as the compact and appressed habit of the plant are the result of growth in an exposed place. Although we have no authentic material of Warburg's *F. stenophylla* for comparison, the description is so clear-cut as to convince us that Martelli was right in reducing it to *F. angustissima* Ridl. The leaves vary greatly in length but the infructescence appears to be constant in its characters.

We might also add that the specimen, *Lane-Poole 410*, distributed as this species, certainly does not belong to the entity under discussion. We have not sufficient similar material by which to identify it.

***Freycinetia linearis*** sp. nov. § *Oligostigma*.

Frutex scandens; ramulis  $\pm$  4 mm. crassis; internodiis 3–9 mm. longis; foliis confertis, subcoriaceis, erecto-ascendentibus, anguste linearibus, sursum attenuato-acuminatis, 25–35 cm. longis,  $\pm$  4 mm. latis, margine integris vel in parte apicali obsolete denticulatis; auriculis 2–4 cm. longis, 4 mm. latis, membranaceo-scariosis, cito a folio solutis; inflorescentiis terminalibus; spathis caducis; spadicibus foemineis 3 vel 4, pedicellis  $\pm$  1 cm. longis, praecipue in parte superiore scabris; syncarpiis immaturis oblongis, 1–3 cm. longis, 0.5–1 cm. latis; baccis immaturis, praeter apicem succulentis, in parte apicali liberis, breviter truncato-pyramidatis; stigmatibus 1–3,  $\pm$  confluentibus, annulo prominulo cinctis; staminodiis brevissimis; seminibus immaturis; rhaphe raphidophora; strophiole nullo.

NETHERLANDS NEW GUINEA: 12 km. northeast of Lake Habbema, *Brass 11049* (TYPE), November 1938, alt. 2600 m., covering the dead stump of a tree in a forest clearing; Bele River, 18 km. northeast of Lake Habbema, *Brass 11462*, November 1938, alt. 2200 m., massed on trees in forest edges; common but seldom fertile.

From the description, most like *Freycinetia Naumannii* Warb. of the Bismarck Archipelago, but differing in the longer leaves and the rough peduncles of the syncarps. Among Papuan species, superficially suggesting *F. linearifolia* Merr. & Perry, but with almost terete rather than 3-angled branchlets, practically smooth leaves and auricles, scabrous peduncles and only 1–3 stigmas.

***Freycinetia fibrosa*** Martelli, Jour. Arnold Arb. **10**: 138. 1929.

The material, *Brass 3908, 5178*, cited in our first article on New Guinean Pandanaceae\* as *Freycinetia sogerensis* Rendle, is really *F. fibrosa* Martelli. A photograph of the type of *F. sogerensis* Rendle,

\*Jour. Arnold Arb. **20**: 147. 1939.



received sometime after the publication of our paper, clearly shows this to be one of the species with axillary or lateral inflorescences, while *F. fibrosa* Martelli has terminal ones.

***Freycinetia trachypoda*** sp. nov. § *Oligostigma*.

Frutex scandens ad 15 m.; ramulis  $\pm$  6 mm. crassis; internodiis circiter 1 cm. longis; foliis superioribus ad apicem ramorum confertis, coriaceis, anguste linearibus, basi amplexicaulibus, sursum attenuato-acuminatis, 60–80 cm. longis, 1.5 cm. latis, praecipue basim versus tessellatis, margine minute remotiuscule dentato-serratis, interdum in parte media laevibus; costa media in parte superiore minute remotiuscule spinulosa; auriculis membranaceis, 6–8 cm. longis, circiter 7 mm. latis; inflorescentiis foemineis terminalibus, spathis caducis; spadibus 3, pedicellis circiter 4 cm. longis, 5 mm. latis, hispidulis, pilis crassis rigidis rectis vel curvatis, confertis, circiter 1 mm. longis; syncarpiis immaturis oblongo-cylindricis, 6–6.5 cm. longis, circiter 1.8 cm. latis; baccis prismaticis, immaturis 6 mm. longis; stigmatibus 2–3 annulo angusto cinctis.

NETHERLANDS NEW GUINEA: Hollandia, *Brass* 8997 (TYPE), 11847, July 1938, alt. 50 m., common in old secondary rain-forest (scrambling to 15 m.; leaves somewhat glaucous below; fruit unripe).

The habit of this species is very similar to that of *Freycinetia Klossii* Ridley, but the leaves and the syncarps are longer in proportion to their width, the peduncles are hispidulous and the stigmas 2–3.

***Freycinetia gladiifolia*** Martelli, *Webbia* 3: 185, 311. 1910.

NETHERLANDS NEW GUINEA: Hollandia, *Brass* 8994, 8995, 9004, alt. 50 m., common in the rain-forest; eastern slopes of the Cyclops Mountains, *Brass* 8941, alt. 430 m., climbing to 20 m. in tall forest. Bracts orange-red or orange.

This species was based by Martelli on staminate material from Geelvink Bay. Unfortunately, we have only the original description for comparison, and the staminate inflorescence offers so little variation in characters that we hesitate to identify any material on such a basis, yet the species must be considered. In the above collections the leaves vary from 45 to 60 cm. long just below the inflorescence, a little farther down the stem they are 80 cm. long and about 0.7–1 cm. broad. Both ♂ and ♀ inflorescences are represented but none of the ♀ spadices are mature. The peduncles are smooth, the largest spadix (♀) is oblong, 6.5 cm. long, 1.3 cm. diameter, the berries are  $\pm$  prismatic with 2–4 stigmas.

***Freycinetia lateriflora*** Ridley, *Trans. Linn. Soc. II. Bot.* 9: 236. 1916.

NETHERLANDS NEW GUINEA: 6 km. southwest of Bernhard Camp,



Idenburg River, *Brass* 12745, 12798, 13022, alt. 1500 m., 1200 m. and 1300 m. respectively, scrambling to 2–3 m. in the mossy-forest and the rain-forest (bracts green; fruit-heads orange, borne on old wood); 15 km. southwest of Bernhard Camp, Idenburg River, *Brass* 11875, mossy-forest at 1800 m. alt., very characteristic abundant low climber massed about the lower parts of tree trunks (seldom fertile); 18 km southwest of Bernhard Camp, Idenburg River, *Brass* 12690, mossy-forest, at 2150 m. alt., common in gullies but not seen on ridges.

A photograph of the numbers cited in the original description of *Freycinetia lateriflora* Ridley is at hand. The leaves vary from 12 to 25 cm. long and are 4–5 mm. broad. No well developed syncarps appear, although Ridley's description indicates two globose heads 4 mm. long; the berry is characterized thus, "Fructus fere 2 mm. longi, pulposi, oblongi, rubri."

In the collections cited above there is considerable variation and perhaps all do not represent this entity. *Brass* 11875, 12690, 13022 are unquestionably alike, with short leafy branches arising from a main branch with relatively long internodes (1–2 cm.), and leaves 15–35 cm. long, 2–3 mm. broad, narrowed at the apex into a long slender tip inconspicuously serrate-denticulate. These specimens have fruitheads in all stages of development from the immature syncarp 3 mm. in diameter to the mature subglobose one 1.2 cm. diameter (berries with 2–3 stigmas). The other two numbers are possibly only the tips of branches or the apex of the main shoot with leaves clustered at the apex and the inflorescence below them. In *Brass* 12745, the leaves are 35–45 cm. long, 5–7 mm. broad, narrowed at the apex into a very long (5–7 cm.) acuminate, almost subulate tip obviously serrate-denticulate or spinulose, the stem is robust (7 mm. diameter) with short internodes (4–6 mm. long), and the fruitheads are very young (5 mm. diameter), the berries mostly have 3 stigmas. *Brass* 12798 appears to be somewhat dwarfed, the branch ( $\pm$  4 mm. diameter) is very closely scarred or covered with small protruding knobs which are probably the bases of old inflorescences. Only one small axillary  $\delta$  inflorescence (larger spathes  $\pm$  triangular, about 7 mm. long and broad, the one spadix with a smooth peduncle about 4 mm. long, and the stamen-bearing part 3 mm. long, broadly ellipsoid or subglobose) appears amongst the leaves (12 mm. long, 3 mm. broad, smooth).

***Freycinetia erythrospatha* sp. nov. § *Pleiostigma*.**

Caulis in parte superiore foliaceus, circiter 6 mm. crassus; internodiis 0.5–1 cm. longis; foliis confertis, imbricatis, late linearibus, ad apicem



sursum attenuato-acuminatis, subcoriaceis, 20–30 cm. longis, 4–6 mm. latis, margine supra basim per spatium breve serrato-denticulatis, sursum in parte apicali et subtus in costa media obsolete serrulatis; auriculis  $\pm$  2.5 cm. longis, cito in fibras solutis; inflorescentiis lateralibus (infra foliis) vel axillaribus, fere sessilibus; bracteis multis a basi sensim auctis, deciduis, saepius margine sub apice minute spinuliferis, inferioribus 5 mm. longis, triangularibus, obtuse acutis, superioribus 2–2.5 cm. longis, ovatis, rubris; spadibus masculis 3 vel 4; pedicellis tenuibus,  $\pm$  1 cm. longis, circiter 1 mm. latis, laevibus; parte staminifera  $\pm$  8 mm. longa, cylindracea; filamentis 1 mm. longis, antheris parvis, oblongis; spadibus foemineis 3 vel 4; pedicellis 1–2 cm. longis, versus basim interdum spinulosis; syncarpiis (immaturis) oblongis, circiter 1 cm. longis, 5 mm. diametro; baccis (immaturis) 1.5 mm. longis, columnaribus, stigmatibus 4–6.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, *Brass* 12018, 12143, 12242 (TYPE), 12432, January 1939, alt. 1800 m., mossy-forest, in open situations; 18 km. southwest of Bernhard Camp, Idenburg River, *Brass* 12635, 12636, February 1939, alt. 2150 m., mossy-forest, plentiful in open situations. Scrambling to 2–4 m.; bracts red.

Although the leaves of *Freycinetia Gibbseae* Rendle are about the same size as those of this species, the latter may be readily distinguished by the almost sessile inflorescence (common peduncle 0.5–1 cm. long), and the smaller and less showy spathe-like bracts.

***Freycinetia sterrophylla* sp. nov. § *Pleiostigma*.**

Scandens; ramis 8(–17) mm. crassis, foliatis; internodiis  $\pm$  7–10 mm. longis; foliis 30–40 cm. longis, 1–1.5 cm. latis, coriaceis, valide imbricatis, ascendentibus, apice acutis vel acuminatis, margine spinuliferis; auriculis membranaceis, circiter 5 cm. longis, cito in fibras solutis; costa media supra impressa, subtus prominula, apicem versus remotiuscule denticulato-spinulifera; inflorescentiis axillaribus vel lateralibus, raro terminalibus; pedunculo communi (vel ramulo brevissimo) bracteato; bracteis multis, imbricatis, rubris, deciduis late lanceolatis, apice in acumen trigonum desinentibus, margine minute spinuliferis, imis  $\pm$  2 cm. longis, sursum gradatim increscentibus, inferioribus  $\pm$  4 cm. longis, superioribus subito majoribus ac spathiformibus, late ovatis, 4.5–5 cm. latis, 6–7 cm. longis, acuminatis (acumine 0.7–1.5 cm. longis), margine sub apice spinulosis; spadibus 3–4, immaturis oblongo-ellipsoideis, 0.7–2 cm. longis, 0.5–1 cm. latis, maturis subglobosis,  $\pm$  3.5 cm. diametro (interdum ellipsoideis  $\pm$  5 cm. longis); pedicellis 2.5–3 cm. longis,



hispidis (pilis rigidis, rectis vel curvatis confertis, circiter 0.5 mm. longis); baccis oblongis,  $\pm$  1 cm. longis, in apice liberis, sublignosis, anguloso-pyramidatis, truncatis; stigmatibus (3-)4-6 annulo angusto cinctis; seminibus fere 3 mm. longis, rhaphe lata raphidophora praeditis.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass 10697* (TYPE), October 1938, alt. 2750 m., occasional in forests of the slopes (ascending to 20-25 m.; bracts red); Bele River, 18 km. northeast of Lake Habbema, *Brass 11279, 11280, 11567*, November 1938, alt. 2300 m., in tall primary forest, common.

The habit of *Freycinetia Gibbseae* Rendle strongly suggests that of this species, but the latter is a much coarser plant with larger leaves, auricles tending to disappear instead of persisting in shreds, and rather long-acuminate bracts on the inflorescence.

***Freycinetia pleurantha*** sp. nov. § *Pleio stigma*.

Rami 2-2.5 cm. crassi; foliis coriaceis, basim versus paullo angustatis, in parte superiore sensim attenuato-acuminatis, 70-75 cm. longis, 3.5 cm. latis, margine per spatium breve supra auriculis remotiuscule dentatis, in parte media laevibus, ad apicem inconspicue denticulatis; costa media in parte superiore subtus remote spinulosa; auriculis 15-17 cm. longis, cito solutis; inflorescentiis foemineis in ramulis brevissimis axillaribus terminalibus, vel axillaribus in apice pedunculi communis; ramulis bracteis triangulari-navicularibus acutis 3 cm. longis latisque margine sub apice denticulatis (vel spinuliferis) seriebus 3 dense imbricatis indutis; ramulo vel pedunculo communi (in specimine typico) 7.5 cm. longo; spadicebus 4, pedicellis 4-5 cm. longis, praecipue in parte superiore valide hispidis; syncarpiis immaturis cylindraceis  $\pm$  13 cm. longis,  $\pm$  2.5 cm. latis; baccis immaturis  $\pm$  1 cm. longis, prismaticis, in parte superiore coriaceis; vertice plano, annulo cincto; stigmatibus 6-8(-12).

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, *Brass 13096* (TYPE), March 1939, alt. 900 m., ascending to the middle spaces in the mossy forest (lower side of leaves very glaucous; inflorescence axillary; unripe fruit a pale glaucous green).

*Freycinetia Lauterbachii* Warburg (including *F. papuana* Warb. fide Martelli, *Webbia* 3: 313 footnote [2], 1910), *F. junicularis* (Savigny) Merr., *F. rhodospatha* Ridley and *F. pleurantha* form a group of very closely related species, the limits of which are very difficult to determine without further material. At present, *F. pleurantha* appears to be distinct by the proportionately (as compared with the width) greater length of the leaves, their coarser texture, the very long auricles and the



strongly hispid peduncles of the syncarps. Unfortunately, the drupes are very immature and the seeds have not yet developed.

PANDANUS Linnaeus

**Pandanus paludosus** Merr. & Perry, Jour. Arnold Arb. **20**: 172. 1939.

Though much chagrined, we are very grateful to Professor Kanehira for calling our attention to a discrepancy in the original description of this species. He pointed out that if the diameter of the syncarp is 7–8 cm., the drupes could not possibly be 6 cm. long. As a matter of fact the drupes are 3 cm. long (not 6 cm.). The error probably crept in from checking the description with the plate which was sketched on a  $\times 2$  linear diameter, but in printing was reduced to natural size.

**Pandanus dolichopodus** sp. nov. § *Keura*. PLATE I, FIGS. 19–21.

Arbor radicibus aëreis 2 m. longis suffulta; trunco 16 m. longo apice ramoso; foliis 2.8 m. longis, circiter 8 cm. latis, basi vix dilatatis, chartaceis, sensim acutis, basim versus tessellatis; plicis lateralibus inermibus; costa media acuta basim versus laevi, sursum consperse serrato-denticulata; margine  $\pm$  remotiuscule denticulato-serrato; inflorescentiis terminalibus, paniculatis; infructescentiis pendulis; pedunculo 3.3 m. longo; syncarpiis 5, anguste oblongis (in specimine typico  $\pm$  17 cm. longis,  $\pm$  7 cm. latis); phalangibus (immaturis?) numerosis, 3.5 cm. longis,  $\pm$  1.5 cm. latis crassisque, supra planis; loculis 7–11, parvis, apice breviter convexis, sulcis angustiusculis non profundis separatis; stigmatibus ad verticem loculorum planis hippocrepiformibus; endocarpio osseo, in dimidia parte inferiore phalangis locato; mesocarpio supero cavernoso.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, *Brass 13439* (TYPE), March 1939, alt. 850 m., one example in poorly drained rain-forest (stem 16 m. long, branched into an open crown and supported on spreading stilt-roots 2 m. in length; a measured leaf 2.86 m. long; inflorescence terminal, paniculate; infructescence pendent on a long (3.3 m.) peduncle; fruit-heads 5, glaucous green).

Although resembling *Pandanus scabribracteatus* Mart. in the racemose inflorescence, this species may be distinguished by the more gradually acuminate leaves with smooth plicae, and the narrowly oblong syncarps.

**Pandanus penicillus** Mart. Bull. Soc. Bot. Ital. **1904**: 299, 300. 1904, *Webbia* **4**: 27, *t. 14, f. 2*. 1913. PLATE I, FIG. 18.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River,



*Brass* 13827, April 1939, alt. 55 m., rain-forest, common on moist alluvial soil (large species  $\pm$  15 m. high, with long spreading stilt-roots and twice branched crown; leaves  $\pm$  2 m. long, the lower surface glaucous at the base; fruit-heads terminal, subglobose, glaucous green); 6 km. southwest of Bernhard Camp, Idenburg River, *Brass* 12874, February 1939, alt. 1200 m., occasional in rain-forest of the slopes (13 m. tall; prop-roots 5–6 m. long; stem branched, rather thick, the upper part a smooth shining brown; leaves 250–260 cm. long; fruit-heads terminal, solitary, globose (in specimen 30 cm. long, 29 cm. diameter); upper end of the drupes glaucous green, the lower red).

These two collections seem to represent a single species, one (*Brass* 13827) with immature phalanges, the other (*Brass* 12874) with mature ones. The immature ones correspond closely to the original 3-line description and the later figure of a phalange of *Pandanus penicillus* Mart. This species was described from phalanges collected by D'Albertis in the Fly River region (Netherlands New Guinea fide Mart. in Webbia, l.c.) but has not since been recorded so far as we know. The leaves of the specimens at hand are very much like those of *P. hystrix* Mart. The mature phalanges are  $\pm$  12 cm. long and 3–4 cm. broad, with the endocarp located in the lower half; the mesocarp is more fibrous than medullose.

***Pandanus brachyphyllus* sp. nov.** § *Hombronia*. PLATE I, FIGS. 1–4.

Arbor ad 25 m. alta, ramosa, radicibus aëreis numerosis 4–5 m. longis suffulta; foliis  $\pm$  1.5 m. longis, 8–9.5 cm. latis, basi vix dilatatis, apicem versus sensim attenuatis, apice proprio longe acuminatis, basim versus tessellatis; margine remotiuscule serrato-dentato, dentibus brevibus, basim versus patulo-ascendentibus; plicis lateralibus laevibus vel apicem versus consperse dentatis; costa media acuta sursum remotiuscule serrato-dentata, basim versus remote recurvato-dentata; syncarpio terminali foliis  $\pm$  occultato, 37 cm. longo, 17.5 cm. lato; drupis (phalangi-bus) numerosissimis,  $\pm$  clavatis, 4–5 cm. longis, 9–13 mm. latis, 6–7(–10) mm. crassis, plerumque compressis, in parte libera ( $\pm$  1 cm. longa) angulosis, in vertice saepe transverse sulcatis, plerumque 2–3 (1–4) discis polygonalibus planis terminatis, stigmatibus (1–4) margine discorum lateraliter dispositis; loculis 1–4, monoseriatis vel biseriatis; endocarpio osseo,  $\pm$  1.5 cm. longo, basim versus drupae sito; mesocarpio supero fibroso (paululo meduloso).

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, *Brass* 12255 (TYPE), January 1939, alt. 1800 m., mossy-forest, common in sheltered gullies (large species attaining 25 m.; prop-



roots numerous, 4–5 m. long, not wide-spreading; crown branched; leaves rather short ( $\pm 1.5$  m.), more glaucous above than below; inflorescence terminal; fruit-heads (the one collected measured 37 cm. long, 17.5 cm. broad) more or less hidden among the leaves; lower fleshy part of the ripe drupes red, upper part purple-brown).

At first glance the fruit-head of this species strongly suggests *Pandanus aggregatus* Merr. & Perry, although the drupes are a little shorter and appear to be somewhat clustered, lacking the uniformity characteristic of the latter species. A closer examination shows these small clusters to be phalanges 2–3 (or sometimes –4)-loculed (simple drupes also occur); for this reason, *Pandanus brachyphyllus* has been placed in the section HOMBRONIA. It is to be noted, however, that it is very distinct from the other known Papuan members of this section.

***Pandanus brosimos* sp. nov. § *Bryantia*.** PLATE I, FIGS. 12–15.

Arbor ad 20 m. alta, superne divaricato-ramosa, basi radicibus aëreis longis suffulta; trunco radicibusque aculeatis; foliis  $\pm 3.5$  m. longis, basi dilatatis,  $\pm 18$  cm. latis, sursum angustatis, medio circiter 9–10 cm. latis, sensim longe acuminatis; basim versus laevibus, demum subtus crebre venoso-striatis, supra lineis longitudinalibus impressis  $\pm$  obscuris percursis, in parte superiore plicatis; plicis lateralibus inermibus; costa media superne spinuloso-serrata, basim versus laevi; margine (probabiliter laevi) supra basim per spatium longiusculum ( $\pm 35$  cm.)  $\pm$  fracto, sursum remotiuscule dentato-serrato; dentibus validiusculis, curvulis; syncarpio pendulo, solitario, terminali, ellipsoideo, 28 cm. longo, 21 cm. diametro; drupis numerosis (immaturis),  $\pm$  prismaticis, 6 cm. longis, 1–1.3 cm. latis, pentagonis, basi angustatis; pileo libero, circiter 1.3 cm. longo, pyramidato, vertice oblique explanato vel oblique convexo, stigmatе bilobo coronato; mesocarpio supero  $\pm 2$  cm. longo, fibroso; endocarpio osseo, 3–3.5 cm. longo, in vertice rotundato ibique 6–10 mm. lato.

NETHERLANDS NEW GUINEA: 18 km. southwest of Bernhard Camp, Idenburg River, *Brass 12698* (TYPE), February 1939, alt. 2150 m., mossy-forest, plentiful in open places on the slopes (up to 20 m. high, the stem branched to form a spreading crown; stilt-roots long but not wide-spreading; stem and stilt-roots prickly; leaves  $\pm 3.5$  m. long, glaucous underneath, broad at the base; fruit-heads terminal and pendent below the leaves, ovoid, 28  $\times$  21 cm.; drupes a very pale glaucous green; unripe seeds large).

Mr. Brass points out that "although growing in the forests of uninhabited mountains, there is evidence to show that the trees are visited



by the natives of the neighboring valley. The species is probably identical with the one which is planted or preserved for its edible seeds on the slopes of the Snow Mountains, north and northeast of Mount Wilhemina."

*Pandanus brosimos* evidently belongs to the same section as the plant we take to be *P. Julianettii* Mart. (another species used for food) but we have not yet found any species with drupes closely resembling the ones described above.

***Pandanus leptocaulis*** sp. nov. § *Bryantia*. PLATE I, FIGS. 22–24.

Planta  $\pm$  2 m. alta, non ramosa, radicibus aëreis deficientibus; foliis superioribus subcoriaceis, infra inflorescentiam pedunculo 10–13 cm. longo fultam, 80–140 cm. longis, 2 cm. latis, sursum sensim attenuatis, basim versus paullo dilatatis, amplexicaulibus; costa media subtus prominente, acuta, in parte inferiore inermi, sursum remote denticulato-serrata; plicis lateralibus obtusis, inermibus, margine in parte basilari nudo, sursum  $\pm$  remotiuscule breviterque serrato-dentato; inflorescentiis terminalibus; syncarpiis in collectione typica 1–3, modice approximatis, aurantiacis; singulo syncarpio cum spatha propria, chartacea, naviculari, longitudinaliter venosa, oblongo, 6–9 cm. longo, circiter 3.5 cm. lato; drupis numerosis, 12–15 mm. longis, 3–4 mm. latis,  $\pm$  angulatis, parte apicali libera, 3–4 mm. longa, superne convexa, stigmatate convexiuscule discoideo,  $\pm$  1.5 mm. lato, subbilobo; mesocarpio supero concavo, 3 mm. longo; endocarpio 4–5 mm. longo.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, *Brass 13280, 13328* (TYPE), March 1939, alt. 900 m., very abundant in mossy-forest and the characteristic undergrowth on crests of ridges (slender species  $\pm$  2 m. high, without stilt-roots; not branched; fruit-heads orange).

Among the duplicates of the type-number there are two specimens each with a solitary syncarp, the other inflorescences have either two or three syncarps, the latter we take to be the usual condition.

Among the species of the section BRYANTIA with racemose inflorescences, *Pandanus leptocaulis* is best distinguished by the oblong syncarps, the fairly large convex stigmas of the drupes, and the narrow leaves.

***Pandanus concinnus*** sp. nov. § *Lophostigma*. PLATE I, FIGS. 16, 17.

Arbor  $\pm$  5–6 m. alta; trunco brevi, non ramoso, basi radicibus aëreis longis crassisque suffulto; foliis chartaceis, 140–160 cm. longis, 4 cm. latis, apicem versus sensim attenuatis et acuminato-subulatis, laevibus



vel subtus crebre venoso-striatis, basi non dilatatis, non armatis, sursum margine dentato-serratis; dentibus basim versus validiusculis patulo-ascendentibus, sursum brevioribus crebriusculisque, ascendentibus; plicis lateralibus laevibus et  $\pm$  obscuris; costa media minute spinuloso-serrata; syncarpio solitario, terminali penduloque, ovoideo, 16 cm. longo, 14 cm. diametro; pedunculo in specimine sicco 25 cm. longo; drupis unilocularibus, connatis, numerosissimis, 4–4.3 cm. longis, 3–4 mm. latis, pentahexagonis, in parte apicali libera (5–7 mm. longa) anguste pyramidatis; stylo in vertice subplano, acumine brevissimo et paullo lobato vel dentiformi instructo; stigmatate infra acumen lateraliter disposito; endocarpio fere ad basim drupae sito, osseo, circiter 8 mm. longo; mesocarpio fibroso.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, *Brass 12074* (TYPE), January 1939, alt. 1800 m., mossy-forest, occasional in gullies ( $\pm$  5–6 m. high; stem short, unbranched, on long stout prop-roots; fruit-head terminal, pendent below the leaves, conical, purplish brown, 16 cm. long, 14 cm. diameter).

A very distinct species which, only in the fairly long, free, somewhat glossy and oblique apices of the drupes, shows some similarity to *Pandanus lamprocephalus* Merr. & Perry. The drupes closely resemble those of *P. atropurpureus* Merr. & Perry, but the projection of the style beyond the flattened vertex is much shorter than in the latter species.

***Pandanus atropurpureus* sp. nov.** § *Rykia?* PLATE I, FIGS. 9–11.

Arbor 8.5(–16) m. alta, basi radicibus aëreis suffulta; foliis  $\pm$  2.75 m. longis, basi paullo dilatatis,  $\pm$  13 cm. latis, medio circiter 9–10 cm. latis, sursum sensim acuminatis; basim versus  $\pm$  tessellatis; plicis lateralibus inermibus; costa media basim versus laevi, sursum spinuloso-serrata; margine supra basim per spatium breve ( $\pm$  10 cm.) inermi, sursum dentato-serrato; dentibus in parte superiore minutis, arcte ascendentibus; spathis chartaceis, navicularibus, margine et costa media subtus minute dentato-serratis; syncarpio terminali, 35 cm. longo, 17.5 cm. diametro; drupis numerosissimis, unilocularibus, connatis, 4–4.5 cm. longis, 3–5 mm. latis, penta—hexagonis; pileo pyramidato, in parte superiore libero, vertice subrotundato vel planiusculo, procurvo, in stylum angustum obliquumque circiter 1 mm. latum, 1–2 mm. longum, planum, corneum (?), simplicem vel dentiformem producto, apicis facie ventrali stigmatica; endocarpio fere ad basim drupae sito, osseo, tenui, 8–10 mm. longo.

NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, *Brass 13648* (TYPE), March 1939, alt. 850 m., occasional in the rain-forest of the slopes (stem 8.5 m. long, not branched;



stilt-roots short,  $\pm$  1.5 m. in length; leaves  $\pm$  2.75 m. long, the under-side glaucous; inflorescence terminal; fruit-head 35 cm. long, 17.5 cm. diameter [upper drupes missing]; drupes red, the upper hard part purple-black); *Brass 13621*, plentiful in the more open and swampy parts of the flood-plain rain-forests (large species  $\pm$  14–16 m. high, with branched crown and long stilt-roots; leaves  $\pm$  3 m. long, glaucous underneath; inflorescence terminal; fruit-head, minus the upper drupes, 43 cm. long, 20 cm. diameter; lower soft part of the drupes yellow, upper hard part purple-black)

On account of the unusually long and projecting (perhaps slightly corneous) tip of the style with the stigma on the ventral surface, we are inclined to associate *Pandanus atropurpureus* with the section RYKIA (not known from Papua) rather than with LOPHOSTIGMA, although the latter is the section to which a great many species of the Papuan region belong. In doing so, nevertheless, we point out the similarity in the shape of the heads of the drupes of *P. lamprocephalus* Merr. & Perry, *P. concinnus* and this species. As a matter of fact the entire structure of the drupe of *P. concinnus* closely approaches that of *P. atropurpureus*, although the two plants themselves are vastly different in gross aspect.

**Pandanus Odoardi** Martelli, Bull. Soc. Bot. Ital. **1904**: 304. 1904; Webbia **4**(1): 25. 1913, **4**(2): t. 39, f. 6–11. 1914; Merr. & Perry, Jour. Arnold Arb. **20**: 182. 1939.

*Pandanus papuanus* Ridl. Trans. Linn. Soc. II. Bot. **9**: 237. 1916, non Solms-Laub. (1883).

NETHERLANDS NEW GUINEA: 2 km. southwest of Bernhard Camp, Idenburg River, *Brass 13620*, alt. 700 m., rain-forest undergrowth (stemless; peduncle erect; fruit-head green). Endemic.

Although the syncarp is somewhat immature, the drupes a little smaller than those of *Brass 7190* (from Palmer River), and the apices of the drupes very little, if at all, granular; nevertheless, both appear to belong to the same species.

The photograph of *Pandanus papuanus* Ridley received from the British Museum through the courtesy of Dr. J. Ramsbottom, is fairly convincing evidence that this plant is conspecific.

It should have been noted in our last paper that Martelli's description of *Pandanus Odoardi* begins "Syncarpia spicata" without any indication of the number of syncarps in the spike. In our material the syncarp is solitary. Nevertheless, since the other characters of the description and those of the collections agree reasonably well, we cannot do more at present than call attention to this difference.



**Pandanus adinobotrys** sp. nov. § *Acrostigma*. PLATE I, FIGS. 5-8.

Arbor 6-7 m. alta; trunco non ramoso, radicibus aëreis deficiente; foliis rigidiuscule coriaceis,  $\pm$  3.25 m. longis, basi 9.5 cm. latis, medio circiter 7 cm. latis, apicem versus sensim attenuatis, apice acuminatis, basim versus non dilatatis, supra tessellato-granulosis, subtus crebre venostriatis; plicis lateralibus obtusis, inermibus; costa media subtus prominente, acuta, spinuloso-serrata, basim versus spinis robustis patulis vel retrorsis hinc inde instructa; margine robuste acuteque serrato-dentato, in parte basilari dentibus validis horizontalibus,  $\pm$  4 mm. longis, sursum minoribus, in parte apicali crebris minutisque; inflorescentiis axillaribus; pedunculo circiter 30 cm. longo; syncarpiis 9, ad apicem pedunculi dense confertis et spicatim dispositis (spica 17 cm. longa, 11.5 cm. diametro), quove globoso-reniformi vel leviter compresso, 4-5.5 cm. longo, 6-8.5 cm. lato; drupis numerosis, 2 cm. longis, 0.5 cm. latis; pileis inter se in parte inferiore agglutinis, a druparum parte seminifera facile secedentibus, angulosis, conoideis ( $\pm$  7 mm. longis), in stylum ( $\pm$  7 mm. longum) spiniformem desinentibus; stigmatibus anguste linearibus; parte seminifera 11-13 mm. longa; mesocarpio supero concavo; endocarpio circiter 8 mm. longo, supra plano-truncato.

NETHERLANDS NEW GUINEA: 15 km. southwest of Bernhard Camp, Idenburg River, *Brass 12077* (TYPE), January 1939, alt. 1800 m., mossy-forest, common in seral growths (6-7 m. high; no prop-roots; stem not branched; leaves stiff, drooping,  $\pm$  3.25 m. long, glaucous underneath; inflorescence paniculate, axillary; fruit-heads 9, pale red).

In the compact spicate infructescence and the broader than long syncarps this species is most like *Pandanus setistylus* Warb.; but, the drupes have long conical apices tipped by spine-like styles of approximately the same length; whereas, in *P. setistylus* Warb., the spine-like styles of the drupes are at least three times as long as the very short apices. In addition, the leaves of *P. adinobotrys* are larger than those of the related species.

## PITTOSPORACEAE

## PITTOSPORUM Banks

**Pittosporum berberidoides** Burkill, Kew Bull. 1899: 96. 1899; E. Pritzel in Engler, Nat. Pflanzenfam. ed. 2, 18a: 276. 1928.

BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass 4399*, in forests, alt. 3680 m., common (erect, branched, slender tree 3-6 m. tall; branchlets and petioles purple-red; corolla with whitish tips; anthers yellow; fruit and seeds black). Apparently the first record



of a collection of this Papuan species since the original description was published.

Some little variation from the diagnosis of *Pittosporum berberidoides* Burk. may be noted, as the branchlets are 3–4 mm. thick, the leaves up to 3.5 cm. long, 2.5 cm. broad, petiole about 1 cm. long and apparently odorless. We add a brief summary of floral characters: flowers solitary (on peduncles  $\pm$  2 cm. long), in bud about 12 mm. long; sepals 5, separate, narrowly ovate (3 mm. long), ciliate, acutish; petals 5, free, broadly linear (12 mm. long, 2.5 mm. broad), obtuse, 3-nerved, recurved at the apex, margin minutely ciliolate; stamens 5, about 7 mm. long, filaments slender, slightly thickened towards the base, anthers narrowly ovate (2 mm. long), cordate; ovary (3.5 mm. long) scarcely stipitate, glabrous; placentae 2, each 6-ovulate; style glabrous; stigma not at all thickened.

***Pittosporum pullifolium*** Burkill, Kew Bull. 1899: 96. 1899; E. Pritzel in Engler, Nat. Pflanzenfam. ed. 2, 18a: 276. 1928.

BRITISH NEW GUINEA: Central Division, Mount Albert Edward, Brass 4222, alt. 3680 m. NETHERLANDS NEW GUINEA: Lake Habbema, Brass 9087A, alt. 3225 m.; 2 km. east of Wilhemina-top, Brass & Myer-Drees 9798, 10211, 10129, alt. 3800 m.; 7 km. northeast of Wilhemina-top, Brass & Myer-Drees 9955, 9993, alt. 3560 m.; 11 km. northeast of Wilhemina-top, Brass 11853, alt. 3400 m. According to the field notes, a stiff shrub or small tree 1–5 m. high, common in forest borders. Type from Mount Scratchley, British New Guinea; apparently unreported since the original collection.

In most of our specimens the leaves are a little larger (up to 7.5 cm. long, 3.5 cm. broad) than the measurements of the type-specimens (as found in the description); the apex varies from cuspidate to obtuse or retuse, the upper surface is rugose. The specimens have both flowers and fruit. The dried capsules are orange-colored or brown, chiefly glabrous, ellipsoid (1.5–2.3 cm. long), shortly mucronate at the apex, and 2-valved; seeds numerous, each on a short ( $\pm$  2 mm. long) funiculus, biseriate on both placentae, purple or purple-black, horizontally compressed.

***Pittosporum ramiflorum*** Zoll. ex Miq. var. ***parvifolium*** Merr. & Perry, var. nov.

Omnibus partibus quam in forma typica paullo minoribus; foliis ellipticis, abrupte acutis, 4–8 cm. longis, 2–4 cm. latis; inflorescentiis 2–2.5 cm. longis; petalis circiter 5.5 mm. longis, trinerviis; ovario 2 mm. longo, in dimidio inferiore pubescente; stylo 2 mm. longo, glabro.



NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass* 10575 (TYPE of var.), October 1938, alt. 2800 m., banks of a forest stream (very slender small tree 5–8 m. high; flowers yellow, fragrant); *Brass & Versteegh* 10474, alt.  $\pm$  2740 m. (tree 18 m. high, 28 cm. diameter).

These collections have been set apart on account of the smaller leaves and the somewhat smaller inflorescence. The species is represented by the following numbers, some of which are transitional forms:

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass* 10597, 10649, 10650, 10857, alt. 2800 m.; Lake Habbema, *Brass* 9357, alt. 3225 m.; Bele River, 18 km. northeast of Lake Habbema, *Brass* 11379, 11381, alt. 2200 m.; Balim River, *Brass* 11708, *Brass & Versteegh* 11190, alt. 1600 m. and 2160 m.; 2 km. southwest of Bernhard Camp, Idenburg River, *Brass* 13475, alt. 800 m.

E. Pritzel in Engler, op. cit. 276, noted that this panmalaysian species had not been reported from the Solomon Islands. The following collection appears to be a reasonably good match for the Papuan material of this species: Ysabel Island, Tiratona, *Brass* 3307, at 600 m. alt. *Kajewski* 2625 from Guadalcanal Island may also belong here.

***Pittosporum Versteeghii* sp. nov. § *Eupittosporum*.**

Arbor 22 m. alta, 27 cm. diametro; ramulis novellis ferrugineo-tomentosis, ad maturitatem glabratis; foliis subverticillatis, 6–10 cm. longis, 2.5–4 cm. latis, late lanceolatis, abrupte ac oblique acuminatis, basi acutis, margine integris ac anguste revolutis, longiuscule petiolatis (petiolo 1–2 cm. longo,  $\pm$  tomentoso), supra rugulosis, glabris, interdum costa media pubescente, subtus ferrugineo-tomentosis demum glabrescentibus, nervis lateralibus utrinque 5–7, prominentibus procul a margine laxe reticulato-anastomosantibus, venulis laxe reticulatis; inflorescentiis terminalibus; pedunculo brevi (4 mm.) vel nullo; floribus singulis vel umbellatis, umbellis paucifloris (usque 5-floris), pedicellatis; pedicellis 1 cm., fructigeris ad 1.5 cm. longis; sepalis lanceolatis, 5.5 mm. longis, acuminatis, apice recurvis, subtus tomentosis, supra glabratis; petalis liberis, linearibus, 7.5 mm. longis, acutis, trinerviis; staminibus vix 5 mm. longis, filamentis tenuibus; antheris 0.8 mm. longis, apiculatis; ovario ellipsoideo, 3–3.5 mm. longo, adpresso-hirsuto, sessili; stylo glabro, 1.5 mm. longo; stigmatibus crasso, leviter bilobo; capsula bivalvi, subglobosa,  $\pm$  8 mm. diametro, vel paullo latiore quam longa, vix compressa, glabrata; seminibus angulatis.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass & Versteegh* 10456 (TYPE), October 1938, alt.  $\pm$  2860 m., com-



mon in old secondary forest (tree 22 m. high, 27 cm. diameter; flowers yellow; fruit orange-colored).

At first glance this collection suggests *Pittosporum ferrugineum* Ait., a wide-spread species of the lower altitudes. It differs, however, in the reduced or very short (often lacking) axis of the inflorescence, the relatively few flowers (1-5) in an inflorescence, and the rugulose, prominently veined leaves.

***Pittosporum Brassii* sp. nov. § *Chelidospermum*.**

Frutex 1-2 m. altus; ramis cinereis; ramulis novellis fulvo-pubescentibus; foliis subverticillatis, 6-16 cm. longis, 2-2.5 cm. latis, anguste obovatis, abrupte acuminatis, basi cuneato-acutis, margine integris vel repandulis, breviter petiolatis (petiolo 0.5-1 cm. longo, glabro vel sparsissime piloso), utrinque glabris, in sicco supra viridulis vel olivaceis, subtus pallidioribus, venis utrinque circiter 5-7, a margine distanter (5-9 mm.) arcuato-conjunctis, venulis laxe reticulatis; stipulis linearibus, caducis; inflorescentiis terminalibus; pedunculo crassiusculo ( $\pm$  2 mm. lato), fulvo-pubescente; floribus 3-8, pedicellatis; pedicellis fulvo-pubescentibus bracteatis,  $\pm$  3 mm. longis (fructigeris  $\pm$  8 mm. longis, 1 mm. latis); sepalis lineari-lanceolatis, 4 mm. longis, glabris, ciliatis; corolla tubulosa, glabra, lobis obtusis, recurvis; filamentis liberis, antheris linearibus; ovario  $\pm$  3 mm. longo, oblongo, fusco-pubescente; stylo glabro,  $\pm$  4 mm. longo; capsula subglobosa, vix 2 cm. diametro, sessili, aurantiaca, glabrata (sparse pilosa), bivalvi; seminibus  $\pm$  20, longe funiculatis, nigris.

NETHERLANDS NEW GUINEA: Idenburg River, 18 km. southwest of Bernhard Camp, *Brass* 12671 (TYPE), February 1939, alt. 2150 m., in bamboo undergrowth of mossy-forest ("tree" 2 m. high; flowers pink); *Brass* 12694, alt. 2000 m., in undergrowth of a rain-forest gully ("tree" 2 m. high); 9 km. northeast of Lake Habbema, *Brass* 10996, October 1938, alt. 2700 m., in forest of valley bottom (one example: shrub 1 m. high; fruit orange, seeds black).

In the section CHELIDOSPERMUM, endemic to New Guinea, five species and one variety (*P. sinuatum* Blume, *P. chelidospermum* Blume, *P. novoguineense* Miquel, *P. Galai* K. Schumann, *P. quinquevalvatum* Warburg, and *P. Galai* var. *stipulosa* K. Schum. & Lauterbach) have previously been described. These have been reduced one after another to the synonymy of *P. sinuatum* Bl., until, in the latest summary of the section, Engler, *Pflanzenfam.* ed. 2, 18a: 275. 1928, E. Pritzel treated the five species jointly as *P. sinuatum* Bl. Although we have no original or authentic material for comparison, the following specimens appear to be typical *P. sinuatum* Bl.: *Brass* 3840, 5622, 6812, 6849, 7009, 13471,



13675. All these except *Brass 6812* are good fruiting specimens showing an ellipsoid or obovate capsule with a short stipe (4–5 mm.) above the thick pedicel, and the infructescence axis is so short that it is sometimes difficult to distinguish both pedicel and peduncle. This stipitate character is clearly foreshadowed in the flowers of *Brass 6812*; here the ovules are borne 2–2.5 mm. above the base of the ovary, which is  $\pm$  fusiform.

On the other hand, the capsule of *Pittosporum Brassii* is subglobose and sessile, borne on a slender pedicel clearly distinguishable from the peduncle; likewise the ovary is sessile and  $\pm$  ellipsoid. On the whole both the flowers and the leaves are a little smaller than those of *P. sinuatum* Bl.

## ROSACEAE

### RUBUS Linnaeus

**Rubus Macgregorii** F. v. Muell. Trans. Roy. Soc. Victoria I. **2**: 4. 1889; Focke, Abhandl. Naturw.-Ver. Bremen **13**: 165. 1894, Bot. Jahrb. **54**: 72. 1916; van Steenis, Bull. Jard. Bot. Buitenz. III. **13**: 245. 1934.

BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass 4312*, May–July, 1933, alt. 3600 m., in grassland shrubbery near the edge of the forest (low rambling shrub; branches dark purple; petioles and sepals purple-red; petals greenish white; fruit immature).

Mr. C. T. White reports that this plant is an exact match for Mueller's type (fide Mr. J. F. Rae). Since this is a somewhat perplexing species previously known only from the type-collection, it seems worth while to record this second collection with the field-note.

Focke apparently did not include *Rubus Macgregorii* F. v. Muell. in his "Species Ruborum" (1910–1914) but in 1916, having then seen a scanty specimen representing the original collection, gave an amplified description (Bot. Jahrb. **54**: 72), although he was unable to indicate its proper section; and van Steenis (Bull. Jard. Bot. Buitenz. III. **13**: 245. 1934) records it as an isolated species. In accordance with his characterizations of subgenera and sections, the species clearly falls in *OROBATUS* as delimited by Focke. In his "Species Ruborum" only one species of the subgenus, *Rubus Copelandii* Merr. of the Philippines, has been reported from the Old World, all others being from South America (one species extending across the Isthmus of Panama into Costa Rica).

**Rubus dendrocharis** Focke, Bot. Jahrb. **54**: 70. 1916.

*Rubus Hasskarlii* Miq. subsp. *dendrocharis* Focke, Bibl. Bot. **17**: 99. 1910.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake



Habbema, *Brass 11376*, November 1938, alt. 2200 m. (scrambling in open grassy second growths on garden clearings; branches white). SOLOMON ISLANDS: Malaita Island, Quoimonapu, *Kajewski 2377*, alt. 300 m., in rain-forest (a prickly vine climbing in rain-forest trees; leaves brown beneath, covered with a dense tomentum; fruit shiny red when ripe).

This is one of the forms of that either multiple or variable species, *Rubus moluccanus* L., with a fairly distinctive leaf-outline.

In addition to the above we have at hand several collections from British New Guinea, Netherlands New Guinea and the Solomon Islands, which are surely very close to, if not identical with, *R. moluccanus* L. It should be pointed out also that some of these (particularly from Mafulu, Tarara and Biriatabu) closely resemble and ought to be compared with *R. Hillii* F. v. Muell. (if this be a distinct species).

Focke saw no Amboina material representing *Rubus moluccanus* L. but reproduced the Rumphian plate on which the Linnean binomial was based. *Robinson 270* from Amboina clearly represents the typical form of *R. moluccanus* L.

***Rubus Archboldianus* sp. nov. *Idaeobatus* § *Alpestres*.**

Frutex scandens, ramis teretiusculis petiolisque glabris vel sparse pubescentibus, aculeis minutis recurvis conspersis instructis; foliis trifoliatis, coriaceis; petiolo 2–3.7 cm. longo; foliolis petiolulatis, late obovatis vel ellipticis, apice saepe rotundatis, basi cuneatis vel obtusis, inciso-serratis, basim versus integris, utrinque 5–8-nervatis (nervis supra impressis subtus elevatis interdum minute pubescentibus), costa pubescente interdum subtus aculeata excepta glabris, foliolo terminali 2.7–5.5(–9) cm. longo, 2–3.5(–5) cm. lato, petiolulo 4–6 mm. (–2 cm.) longo, foliolis lateralibus minoribus paullo obliquis, petiolulis  $\pm$  2 mm. longis; stipulis in lacinias lineares fissis vel partitis; floribus solitariis terminalibus; pedunculo brevissimo (5–7 mm. longo); bracteis circiter 4-fissis, lacinulis linearibus; calyce extus tomentoso; cupula pelviformi, aculeata; sepalis utrinque tomentosis, ovatis, 1.5 cm. longis, exterioribus apice (interdum margine) subfimbriato-fissis; petalis vix 1.5 cm. longis, ovatis, obtusiusculis, margine erosis; staminibus (in flore unico dissecto) circiter 55; carpellis numerosis, dense pubescentibus vel villosis; fructibus immaturis (?) circiter 1.5 cm. diametro, carpellis siccis dorso villosis, ad latera glabris; putamine grosse lacunoso-rugoso.

BRITISH NEW GUINEA: Central Division, Wharton Range, Murray Pass, *Brass 4565* (TYPE), July–September 1933, alt. 2840 m., forest undergrowth (few plants observed scrambling amongst trailing bamboo;



branches and petioles, peduncles and calyx reddish brown; corolla red); Mount Tafa, *Brass 4012*, alt. 2310 m., rare at the edge of low, mossy-forest (large Rambler; stiff leaves; dark red flowers).

Although these two collections undoubtedly represent the same species, *Brass 4012* has much larger leaves (terminal leaflet elliptic or ovate-elliptic, acute at the apex, rounded or obtuse at the base,  $\pm$  9 cm. long, 5 cm. broad, petiolule up to 2 cm. long); the flowers and the stipules are similar to those of the type. This difference in foliar characters is probably the result of growth in contrasting habitats, or possibly the type is from a mature plant and the other specimen from a relatively young one.

The species closely resembles *Rubus alpestris* Blume in both the floral and the stipular characters. It differs principally in the very distinctly petiolulate leaflets. Possibly on account of the latter character *R. Archboldianus* should have been placed in the PUNGENTES, but we believe its natural affinities are with the ALPESTRES.

**Rubus Lorentzianus** Pulle, Nova Guinea 8(4): 647. 1911.

NORTHEASTERN NEW GUINEA: Sarawaket, *Clemens 5591, 10222*, alt. about 3000 m. and 3300–4000 m. NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass 10632*, alt. 2800 m., mossy-forest, often scrambling in forest openings; Lake Habbema, *Brass 9131*, alt. 3225 m., scrambling to 3–4 m. in forest edges (branches, spines, petioles and calyx reddish). Type from Netherlands New Guinea.

As far as can be determined from the description these collections belong to *Rubus Lorentzianus* Pulle. Perhaps the pubescence is less than in the original; however this character varies considerably in the specimens cited, no. 9131, except the inflorescence, being practically glabrous. Probably belonging here also are two other collections differing only in being essentially glabrous and somewhat less aculeate (prickles are lacking from the primary veins of the leaves): 9 km. northeast of Lake Habbema, *Brass 10980*, alt. 2700 m., plentiful in forest openings (rambling shrub with very smooth pale branches; flowers white; fruit red); and, Bele River, 18 km. northeast of Lake Habbema, *Brass 11262*, alt. 2200 m., frequent in forest openings.

**Rubus Muelleri** F. M. Bailey, Proc. Roy. Soc. Queensl. 1: 9. 1884, Queensl. Flora 2: 527. 1900, Comprehens. Catal. Queensl. Pl. 167, f. 134. 1912; Domin, Bibl. Bot. 22: 717. 1925.

SOLOMON ISLANDS: Bougainville Island, Kupei Gold Field, *Kajewski 1629*, alt. 850 m., common, rain-forest (up to 3 m. high, rambling; flow-



ers white; fruit edible, red). Previously not recorded from outside of Queensland.

This specimen with occasionally laciniate bracts corresponds very well with a collection of *Rubus Muelleri* F. M. Bail. from Queensland.

**Rubus papuanus** Schlechter in Diels, Bot. Jahrb. **62**: 481. 1929.

BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass 4246*, alt. 3680 m., rare, in sheltered place among rocks on grassland (soft wooded shrub up to 1 m.; branches and prickles red; leaves pale green; petals white; fruit red, sour). Reported previously only from Mount Sarawaket, Northeastern New Guinea.

**Rubus Brassii** sp. nov. *Idaeobatus*.

Frutex vagans, usque 4 m. altus; ramis inermibus, pallidis; foliis chartaceis, longe petiolatis (petiolo usque 5.5 cm. longo), pedato-quinatis, superioribus ternatis, foliolo terminali usque circiter 12 cm. longo, 3.7 cm. lato, longe petiolulato (petiolulo usque 2 cm. longo), foliolis lateralibus paullo minoribus, brevissime petiolulatis (petiolulis 2–3 mm. longis), omnibus lanceolatis, basi obtusis, apice acutis, margine inaequaliter serratis, utrinque praeter costam pubescentem subtus praeter nervos puberulos glabris, utrinque circiter 18–24-nervatis; stipulis lanceolatis vel linearibus; inflorescentiis in apice ramorum subcorymboso-paniculatis plurifloris; ramis pubescentibus; bracteis lanceolatis vel oblongis, incisus vel in lacinulas fissis; pedunculo  $\pm$  1 cm. longo, pubescente; sepalis late lanceolatis, acuminatis (fere aristatis), subtus margine tomentoso excepto leviter pubescentibus, supra tomentosis; petalis albis sepalis paullo longioribus, obovato-ellipticis; staminibus numerosis, filamentis apice paullo angustatis; disco inter stamina et carpella manifesto; carpellis numerosis, minute pubescentibus; stylo tenui; fructibus maturis rubris e drupeolis multis cohaerentibus compositis.

SOLOMON ISLANDS: San Cristobal Island, Hao River Headwaters, *Brass 2891* (TYPE), September 20, 1932, alt. 750 m., crest of a forest spur, common (large straggling shrub; stems unarmed and very pale; leaves pale with sunken nerves; flowers white); Guadalcanal, Uulolo, Tutuve Mountain, *Kajewski 2530*, April 17, 1931, alt. 1200 m., rainforest, common (a small to medium shrub up to 4 m. high; flowers white; fruit red, typically raspberry).

Although this species seems to belong to the subgenus *IDAEOBATUS*, we have been unable to locate it satisfactorily in any section by Focke's key. It falls nearest to the *ALPESTRES*, but can scarcely belong there. The species is quite distinct in its lack of armature and the unusual arrangement of the leaflets.



**Rubus diclinis** F. v. Muell. Trans. Roy. Soc. Victoria I. 2: 5. 1889;  
Focke, Bibl. Bot. 17: 220. 1911, Bot. Jahrb. 54: 71. 1916.

BRITISH NEW GUINEA: Central Division, Wharton Range, Murray Pass, *Brass* 4712, June–September 1933, alt. 2840 m., common in forest fringe and open types of forest (rambler or climber, at times assuming proportions of a small liane; flowers cream-colored; berries pubescent, dull brown with purple-red flesh).

Mr. C. T. White reports this collection to be a good match for co-type material in the Queensland Herbarium. A very obvious character of this species is the pubescence of the carpels. From Northeastern New Guinea, however, we have two collections (*Clemens* 4553, 10343) with somewhat more compact inflorescence but with essentially glabrous carpels. These might possibly represent Focke's var. *papuana* (Bot. Jahrb. 54: 72. 1916) which he described as having somewhat larger leaves than the typical *R. diclinis* of New South Wales. As yet we have not found any record of *R. diclinis* F. v. Muell. from New South Wales except as the name (appearing a second time in "Species Ruborum") is given in italics under *R. Moorei* var. *Leichhardtianus* Domin, Bibl. Bot. 19: 272. 1914 (Heft. 83<sup>1</sup>: 48). The species was originally described from specimens collected by Sir William Macgregor on Mount Knutsford and Mount Musgrave, New Guinea.

**Rubus novoguineensis** sp. nov. *Lampobatus*.

Suffrutex scandens, dioicus; ramulis petiolisque dense pubescentibus, aculeis brevibus recurvisque instructis; foliis 3–5-foliatis, coriaceis; petiolo 1.5–2.5 cm. longo; foliolis petiolulatis, ellipticis vel oblongis, basi apiceque obtusis, margine inciso-serratis, utrinque 5–8-nervatis (nervis supra valide impressis, subtus prominentibus denseque pilosis), supra in sicco fuscis, consperse pilosis, subtus pallidioribus, (nervis costaque consperse aculeatis exceptis) glabriusculis; foliolo terminali 2.5–3.5 cm. longo, 1–1.7 cm. lato, petiolulo 5–9 mm. longo; foliolis lateralibus paullo minoribus; petiolulis 2–4 mm. longis; stipulis deciduis; inflorescentiis axillaribus, racemosis vel (?) racemoso-paniculatis, ramis pedunculisque tomentosis consperse glanduloso-stipitatis; sepalis oblongis (3 mm. longis), obtusis, tomentosus, subtus glandulis longe stipitatis copiose instructis; petalis subaequilongis, utrinque ad basim tantum pubescentibus; staminibus deficientibus; carpellis  $\pm$  12, dense tomentosus, semi-maturis pubescentibus glandulis longe stipitatis instructis; stylo glabro.

BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass* 4337 (TYPE), May–July 1933, alt. 3680 m., common, trailing on forest floor and burnt timber on forest fringes (leaves dark green above; fruit brown, in clusters up to 2.5 cm.).



*Rubus novoguineensis* is similar in habit to both *R. paradoxus* Ridley and *R. Moorei* F. v. Muell., but perhaps more like the former than the latter in the impressed venation, the size of the leaves, the short petioles, and the relatively few carpels. It differs from both in the glandular-pubescent fruit, the narrower leaflets, and the dense pubescence of the young shoots.

*Rubus paradoxus* Ridley appears to be represented in our material by *Brass* 9133, Lake Habbema, 3225 m. alt. (forming dome-shaped masses 1.5–2 m. high in shrubberies of forest margins; flowers green; fruit black, very sour). To the Australian species *R. Moorei* F. v. Muell., already reported from Northeastern New Guinea by Focke, belong the following: 9 km. northeast of Lake Habbema, *Brass* 10773, alt. 2700 m., tall moist forest of a valley bottom (large liane; flowers white); 4 km. southwest of Bernhard Camp, Idenburg River, *Brass* 13083, alt. 850 m., common in seral rain-forest on low flood banks of river (large scrambling shrub; flowers white).

#### POTENTILLA Linnaeus

In a consideration of mountain floras, both Diels (*Bot. Jahrb.* **62**: 481. 1929), and van Steenis (*Bull. Jard. Bot. Buitenz.* III. **13**: 242, 243. 1934), have recently commented briefly on the Papuan species of *Potentilla*; the former accepts the Papuan species as specifically different from, though related to, the Indian ones; the latter indicates that the Papuan species are nearly related to SE. Asiatic ones and thinks that they "only represent forms of these." He notes further, "Section *Leptostylae* — *Anserinae*.— The Malaysian species of this group belong to a Himalayan stock and centre round the *leuconota-Mooniana-microphylla* alliance."

The recent Mount Wilhemina collection, rich in *Potentilla*, confirms both opinions and also contributes a little additional information. A number of the species have only 5 stamens (antisealous), and relatively few achenes. According to Wolf's key of the subsection *POTENTILLINAE* (*Bibl. Bot.* **16**: 15. 1908), these would belong to the genus *Sibbaldia*. Handel-Mazzetti (*Symb. Sin.* **7**(1): 520. 1933), in accepting *Sibbaldia* as a valid genus stresses the relative length of the anther and the filament as well as the broad base of the latter. In our specimens these characters do not seem to be wholly stable. Further, as we consider the variation which we have seen between plants with (4–)5 stamens and 5(–6) stamens, and 5(–6) and 10 stamens, we have hesitated to consider them as representing a group generically distinct from *Potentilla*.

The eight species in these collections appear to belong to the subsection



LEPTOSTYLAE, although both *P. Archboldiana* and *P. Brassii* have a habit strikingly different from the rest.

**Potentilla Archboldiana** sp. nov.

Planta caespitosa; caudice ramoso; ramis brevibus basi foliis fuscis dense obtectis, coma compacta foliorum viridescentium scaporumque coronatis; foliis usque 1.5 cm. longis, breviter petiolatis, bijugis, imparipinnatis; foliolis subglabris, saepius praecipue ad apicem longe ciliatis, interdum lamina trichomis longis consperse vestita, lateralibus oblongis, obtusiusculis, bilobis vel interdum integris, foliolo terminali bilobo vel trilobo; rhachi glabra; stipulis circiter 6–8 mm. longis extus dense villosis; caulibus floriferis folia non excedentibus, simplicibus, foliis 2–4 diminutis (interdum bilobis) instructis, glabris, unifloris; calycis tubo circiter 1.5 mm. longo, glabro; segmentis (8–)10, 1.4–1.5 mm. longis, marginibus ad apicem consperse longeque ciliatis, exterioribus oblongis, obtusis, interioribus subtriangularibus, acutiusculis; petalis quam sepalis paullo longioribus; staminibus (4–)5; carpellis glabris, paucis (6–8); stylo laterali, circiter 0.8 mm. longo.

NETHERLANDS NEW GUINEA: northern slopes of Mount Wilhemina, *Brass & Myer-Drees 10133* (TYPE), September 1938, alt. 4100 m., alpine grassland (very common cushion plant); 7 km. northeast of Wilhemina-top, *Brass & Myer-Drees 9839*, September 1938, alt. 3560 m., common herb in alpine bogs (small yellow flowers).

The pubescence and the floral characters somewhat suggest those of *Potentilla perpusilloides* W. W. Sm. of Sikkim, but the leaves are larger and definitely pinnate. Quite distinct from any other species which we have seen.

**Potentilla Brassii** sp. nov.

Planta pygmaea; caudice  $\pm$  4 mm. crasso, coma pulvinata foliorum scaporumque terminato; foliis basalibus 1–1.5 cm. longis, vix 5 mm. latis, imparipinnatis, 6–9-jugis, breviter petiolatis, stipulis subhyalinis praeditis; rhachi praecipue infra medium patenti-villosa apice saepius glabra; stipulis extus sericeo-villosis, apice libero 2–3 mm. longo, mox lacerato; foliolis glabris vel consperse pilosis, sessilibus, approximatis, in 2 (interdum 3) segmenta linearia inaequalia divisus; segmentis superpositis (?), ventralibus quam dorsalibus brevioribus; pedunculis scapiformibus circiter 2 mm. longis, glabris, foliis 1–2 diminutis praeditis, unifloris; calycis tubo glabro, segmentis (8–)10 glabris vel consperse pilosis, exterioribus 1.4 mm. longis, oblongis, obtusiusculis, interioribus 1.5 mm. longis, late ovatis, acutis; petalis (4–)5, 2.5 mm. longis, anguste obovato-oblongis,



rotundatis haud retusis; staminibus (4–)5; carpellis pluribus; stylo laterali, 0.6–0.8 mm. longo; carpellis maturis 1.4 mm. longis.

NETHERLANDS NEW GUINEA: 5 miles northeast of Wilhemina-top, *Brass* 9427, August 1938, alt. 3440 m., covering parts of an open boggy slope (each plant forming a distinct green rosette  $\pm$  1.5 cm. in diameter; very small yellow flowers); northern slope of Mount Wilhemina, *Brass & Myer-Drees* 10156 (TYPE), September 1938, alt. 4120 m., abundant in alpine bogs; 2 km. east of Wilhemina-top, *Brass & Myer-Drees* 10390, alt. 3650 m., forming dense cushions in moist grassy places (flowers yellow; fruit red).

This is a smaller and more compact plant than any other of this genus which we have seen. The leaflets are unique in that their segments (2–3) seem to be approximately superposed one over the other, the shortest or (more frequently) the shorter lying on the top. This arrangement in a measure suggests that of the lowest segments in the leaves of *Potentilla verticillaris* Steph. but it is constant for the entire length of the rachis, and owing to the unequal length of the segments gives a much stronger impression (at least in the dried specimens) of superposition than of subverticillation. The pubescence of the lower part of the rachis and the stipules is dense; scattered hairs sometimes occur on the leaflets and the flowers, but mostly they are glabrous.

***Potentilla habbemana* sp. nov.**

Caudex parvus subsimplex, radice fasciculata fibrosa praeditus, coma paucorum caulium floriferorum foliorumque terminatus; foliis basalibus lineari-oblongis usque 14 cm. longis (saepius circiter 7 cm.) 1–1.5 cm. latis, petiolatis, stipulis subhyalinis (extus sericeis) praeditis,  $\pm$  8–11-jugis, impari-pinnatis; foliolis sessilibus vel brevissime petiolulatis,  $\pm$  approximatis, in segmenta linearia inaequalia acuta plura (4–7) subpalmatim divisis, subtus sparse sericeo-pilosis vel utraque facie glabris; rhachi saepe sericeo-pilosa vel glabrata; caulibus floriferis pedunculisque saepe sericeo-pilosis; pedunculo 1–2.5 cm. longo, unifloro; calycis tubo sericeo vel glabrato; segmentis glabratis, 2–2.5 mm. longis, acutis, exterioribus late lanceolatis, interioribus subtriangularibus; petalis  $\pm$  obovato-oblongis,  $\pm$  3 mm. longis; staminibus 5–6; carpellis numerosis; stylo laterali circiter 0.8 mm. longo; maturis carpellis glabris, vix carinatis, circiter 1.4 mm. longis.

NETHERLANDS NEW GUINEA: Lake Habbema, *Brass* 9553, 9590, 9594 (TYPE), August 1938, alt. 3225 m., alpine grassland, abundant on marshy ground. A common alpine bog herb often covering the ground on open boggy flats, forming flat rosettes,  $\pm$  8–10 cm. diameter (in the



type-collection one plant 20 cm. diameter); leaves brownish green; flowers yellow.

A species with rather open loose habit, the finely cut leaves doubtfully suggesting the Indian *Potentilla microphylla* Don, but probably more nearly related to *P. parvula* Hook. f. Neither of the latter species have leaflets so deeply cut, nor as few stamens.

Possibly *Brass* 4419 in part, Mount Albert Edward, British New Guinea, belongs here. This is a mixed collection, one plant with finely cut leaflets, another with coarsely incised leaflets; both have ten stamens.

***Potentilla simulans* sp. nov.**

Caudex parvus coma foliorum et scapo e specimine viso unico terminatus; foliis basalibus 3–5 cm. longis, vix 1 cm. latis, lineari-oblongis, circiter 8–12-jugis, impari-pinnatis, breviter petiolatis, stipulis subhyalinis praeditis; rhachi dense patenti-villosa; foliolis subsessilibus vel brevissime petiolulatis, profunde bipartitis; segmentis crassiusculis, convexiusculis, lanceolatis, apice obtusis, basi abrupte angustatis acutisque, supra glabris, subtus villosis; pedunculo (in specimine typico 3 mm. longo) ac flore extus villosis; calycis segmentis circiter 2 mm. longis, exterioribus anguste ovatis, obtusis, interioribus subtriangularibus, acutis; petalis 3 mm. longis, obovato-oblongis, non retusis; staminibus 5; carpellis pluribus, stylo laterali circiter 0.6 mm. longo.

NETHERLANDS NEW GUINEA: Lake Habbema, *Brass* 9594A (TYPE), August 1938, alt. 3225 m., alpine grassland.

When glancing through the duplicate specimens of *Potentilla habbimana* to get an idea of the variation in size, we found a single plant with one fully developed flower, which, although of similar habit, seemed not to belong to the series. On closer examination we find the leaflets divided only once, the entire segments so placed as to appear (superficially at least) verticillate; further, the segments seem to be somewhat fleshy or thickish in texture, slightly convex and often with the midrib (on the upper surface) apparent only in the lower half. The species is near *P. habbimana* but surely quite distinct in foliar characters.

***Potentilla novoguineensis* sp. nov.**

Caudex parum vel modice incrassatus, inter numerosa folia radicalia caules plures laterales emittens; foliis radicalibus et caulinis inferioribus breviter petiolatis, interrupte pinnatis, multijugis (10–15-jugis), foliolis sessilibus vel subsessilibus deorsum decrescentibus, superioribus 1–1.3 cm. longis, oblongis (pinnulis interpositis minoribus, 2–5 mm. longis), inferioribus 2–4 mm. longis, crenato-inciso-dentatis, utrinque sparse



hirsutis vel supra glabrescentibus; stipulis  $\pm$  villosa-hirsutis, foliorum radicalium et caulinarium inferiorum membranaceo-subhyalinis, caulinarium superiorum herbaceis, subvaginantibus, dentatis vel incis; caulibus gracilibus, decumbentibus, ramosis, polyphyllis; ramis foliosis 2-3 flores solitarios (interdum geminatos) laterales et unicum terminalem gerentibus; caulibus, rhachibus, pedunculis, pedicellis, calycibus pilis mollibus patentibus villosa-hirsutis; floribus 0.9-1.3 cm. latis; calycis segmentis 8-10, exterioribus 2-2.5 mm. longis, obovato-oblongis, plerumque apice subtruncatis bidenticulatisque (interdum trilobatis), interioribus 3 mm. longis, anguste ovatis, acutis; petalis 4-5 mm. longis, vix retusis; staminibus probabiliter 10-20 (in floribus dissectis 11-15); carpellis numerosis, stylo laterali (infra medium carpellum locato); carpellis maturis interdum paullo reticulatis.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass* 10727 (TYPE), October 1938, alt. 2800 m., prostrate on native clearings in the forest; 7 km. northeast of Wilhemina-top, *Brass & Myer-Drees* 9863, September 1938, alt. 3560 m., prostrate herb gregarious in shaded mossy edge of forest. BRITISH NEW GUINEA: Central Division, Wharton Range, Murray Pass, *Brass* 4636, June-September 1933, alt. 2840 m., fairly plentiful on creek-banks and other damp situations on open grasslands (leaf rachis and peduncles red; flowers yellow); Mount Albert Edward, *Brass* 4229, May-July 1933, alt. 3680 m., common, prostrate pale green plant of forest glades (flowers bright yellow).

On comparing these collections with the Indian specimens at hand, we find the Papuan material has a habit similar to that of *Potentilla Mooniana* Wight (*P. polyphylla* Lehm.?), but it is not so robust and is somewhat more compact; the leaves and the flowers are smaller than in *P. Mooniana* Wight, and the styles are short-filiform (as in the LEPTOSTYLAE) rather than fusiform (subsection CLOSTEROSTYLAE); they do, however, appear to be placed a little nearer the base than those of the other members of this group, although the position appears somewhat variable.

*Brass* 9394, 5 miles northeast of Wilhemina-top, 3440 m. alt., under banks of a grassland stream, may or may not belong here. This is a single specimen about 35 cm. tall (seemingly upright), sparsely hirsute, with leaves very much like those of the Bornean *P. parvula* Hook. f. (the leaflets broadly elliptic and less dentate or incised than in *P. novoguineensis*) but with flowers (old) closely resembling those of *P. novoguineensis*. The long flowering stems (with 2-3 leaves) branch only near the apex.



**Potentilla Foersteriana** Lauterb. var. **Keysseri** Diels, Bot. Jahrb. 62: 480. 1929.

NORTHEASTERN NEW GUINEA: Sarawaket, *Clemens* 5317, 5765. BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass* 4419 in part, 4231, alt. 3680 m., common on wet alpine grasslands (leaves and flowering stems radiating from a stout woody stock). Type from Mount Sarawaket.

These collections have leaves glabrous on the upper surface (and sometimes on the lower), with leaflets varying in size and in dentation (3-12-incised-dentate).

The following three collections from Netherlands New Guinea appear to differ only in that the leaflets tend to remain sparsely villous or copiously pilose throughout: Lake Habbema, *Brass* 9149, alt. 3225 m., alpine grassland, prominent in succession after ground fires; *Brass* 9542, abundant in raised cushion-like masses on open boggy flats; 2 km. east of Wilhemina-top, *Brass & Myer-Drees* 10131, alt. 3800 m., scattered or forming large cushions on wet grass slopes.

Regardless of the difference in the amount of pubescence we accept these collections as belonging to the same entity; and, we are inclined to agree with Dr. L. Diels that they are distinct from, though closely related to, *Potentilla parvula* Stapf, of Borneo. The Papuan plants (as compared with a specimen from Mount Kinabalu, Borneo) are coarser and much more compact with more crowded leaflets, and the flowers have mostly 5 stamens (occasionally 6 or even ten).

**Potentilla papuana** Focke, Abhandl. Naturw.-Ver. Bremen 13: 162. 1894, Bibl. Bot. 16: 678. 1908; van Steenis, Bull. Jard. Bot. Buitenz. III. 13: 243. 1934.

NETHERLANDS NEW GUINEA: Lake Habbema, *Brass* 9543, alt. 3225 m., gregarious and forming large gray patches in grassy forest glades; 11 km. northeast of Wilhemina-top, *Brass & Myer-Drees* 9746, alt. 3400 m., in wet grassy valley. BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass* 4230, alt. 3680 m., common on grasslands; Wharton Range, Murray Pass, *Brass* 4635, alt. 2840 m., common in sheltered situations on open grasslands.

Although assigning this name to our material, we leave to others, who have access to the types, the task of finally determining whether *Potentilla papuana* Focke is really a species distinct from *P. leuconota* Don, or whether it is only a geographic form. Although lacking types, we have at hand Indian material of the latter species collected and cited



by Hooker f.\* as well as supplementary collections from China which undoubtedly match the Indian material; also a poor specimen of *P. leuconota* var. *borneensis* Stapf from Mount Kinabalu. The Papuan specimens show some resemblance to the Bornean plant but appear to be definitely distinct from our Indian and Chinese collections.

**Potentilla adinophylla** sp. nov.

Caudex subterraneus crassiusculus, coma foliorum atque caulium florum fere scapiformium terminatus; foliis basalibus confertis, imparipinnatis,  $\pm$  12-jugis, usque 4 cm. longis, 8 mm. latis, oblongis, breviter petiolatis; stipulis subhyalinis; foliolis parvis (4 mm. longis), dense confertis, inferioribus gradatim minoribus, sessilibus, interdum subconduplicativis, obscure inciso-dentatis, dense villosis; caulibus floriferis fere scapiformibus, usque 9 cm. longis, saepissime erectis, saepe 1-2-foliatis, interdum ramulo florifero unico auctis, villosito-tomentosis; floribus maturis villosito-tomentosis; calycis segmentis  $\pm$  2.5 mm. longis, anguste ovatis, exterioribus obtusiusculis, interioribus acutis; staminibus 10; carpellis numerosis; stylo laterali 0.8 mm. longo; carpellis maturis glabris.

BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass 4308* (TYPE), May-July 1933, alt. 3680 m., common on shallow soil on bleak, open grasslands (leaves silver-grey; inflorescence erect).

*Potentilla adinophylla* undoubtedly belongs in the same group as *P. papuana* Focke and *P. Foersteriana* var. *Keysseri* Diels. It may be readily recognized, however, by the erect almost scapose habit, the dense arrangement of the leaflets and their villosity.

ACAENA Vahl

**Acaena anserinifolia** (Forst.) Domin, *Bibl. Bot.* **22**: 718. 1925; van Steenis, *Bull. Jard. Bot. Buitenz.* III. **13**: 241. 1934.

*Ancistrum anserinaefolium* Forst. *Char. Gen.* 4, t. 2. 1776.

*Acaena Sanguisorbae* Vahl, *Enum.* **1**: 294. 1805.

NETHERLANDS NEW GUINEA: Lake Habbema, *Brass 9137*, alt. 3225 m., plentiful in grassy edges of forest (flowers white). NORTH-EASTERN NEW GUINEA: Sarawaket, *Clemens 5292, 5716*, alt. 2400-2700 m. BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass 4330*, alt. 3680 m., growing thickly amongst grasses on recently burned forest land.

Diels (*Bot. Jahrb.* **62**: 482. 1929), has recognized the Papuan material as *Acaena Sanguisorbae* Vahl subsp. *papuana* Diels. We merely record these collections under the oldest valid specific name.

\*Hooker f. *Fl. Brit. Ind.* **2**: 352. 1878.



## PYGEUM Gaertner

Eighteen species of *Pygeum* have been reported from the Papuan region. Of these, only one has appeared since Koehne's treatment, Bot. Jahrb. **51**: 208–211. 1913; **52**: 338–345. 1915. With merely the original descriptions for comparison, and with the difficulty of trying to match fruiting specimens with diagnoses of staminate plants, in addition to the question of whether immature pubescent seeds remain pubescent or are sometimes glabrous at maturity (the pubescent seed being a sectional character), we have not found it easy to determine our material. In view of the lack of recent records, and as a working basis for collections about to be or already distributed, we present the following enumeration:

**Pygeum Laurocerasus** Koehne, Bot. Jahrb. **51**: 208, 214. 1913.

BRITISH NEW GUINEA: Central Division, Mount Tafa, *Brass 4884*, alt. 2400 m., on upper fringe of vegetation on a landslip (large diffuse shrub; flowers brown-pubescent; immature fruit yellow-green, about 1.3–1.4 cm. diameter). Reported only from the type-locality, Bismarck Mountain, Northeastern New Guinea.

Only one fruit on the specimen examined. Foliar glands minute, if present.

**Pygeum Pullei** Koehne, Bot. Jahrb. **52**: 338, 344. 1915.

NETHERLANDS NEW GUINEA: 7 and 11 km. northeast of Wilhemina-top, *Brass & Myer-Drees 9995, 9647*, alt. 3560 m. and 3400 m., sub-alpine forest, occasional (trees 8–10–15 m. high, trunk 2 m. long, 25 cm. diameter; leaves convex; flowers yellow; fruit black, glossy). Known only from the type-locality.

Since the two collections cited above agree in the essential features (general habit, leaf-venation, inflorescence-characters) with the original diagnosis (indumentum of the leaves omitted in the description) of *Pygeum Pullei* Koehne, we have placed them here noting that they vary in the following points: new growth very shortly tomentose or only pubescent and very quickly glabrate; leaves somewhat larger (4–8 cm. long, 2–4 cm. broad) and rounded-emarginate at the apex (a large number of the apices broken but only a few at all narrowed); fruiting axis of the inflorescence up to 3.5 cm. long; pedicels 1–2 (scarcely 3, even in fruit) mm. long; stamens (in bud) about 25, and anthers 0.8–1 mm. long.

**Pygeum melanocarpum** sp. nov. § *Mesopygeum*.

Arbor 8–10 m. alta; ramulis puberulis, fuscis; stipulis caducis; petiolo 8–10 mm. longo, glabro vel puberulo; lamina basi obtusa vel acuta vix



rotundata et subtus glandulis plerumque 2 praedita (accessoriis in superiore facie nullis), late lanceolata vel anguste elliptica, 5.5–10.5 cm. longa, 2.5–4 (–6) cm. lata, glabra vel novella subtus minute puberula, apice abrupte obtuseque acuminata, vulgo abrupte reflexa, nervis utrinsecus 6–8, supra impressis subtus prominulis, trabeculis reticuloque  $\pm$  inconspicuis; racemis axillaribus, solitariis, 3.5–7 cm. longis, dense ochraceo-pubescentibus; bracteis  $\pm$  lineari-oblongis, ante anthesin caducis; pedicellis 3–5 (–8) mm. longis; floribus albis, in sicco ochraceo-pubescentibus; cupula turbinata, 3 mm. longa, 4 mm. lata, intus inferiore parte hirsuta; sepalis 5,  $\pm$  1 mm. longis, oblongis; petalis spathulato-oblongis vel fere spathulato-linearibus, quam sepalis paullo longioribus; staminibus 25, circiter 4 mm. longis; filamentis glabris; antheris 0.5 mm. longis; pistillo 5 mm. longo, ovario 1 mm. longo, glabro; drupis transverse ellipsoideis, 7–9 mm. latis, 6–7 mm. longis,  $\pm$  reticulatis; semine glabro.

NETHERLANDS NEW GUINEA: Bele River, 18 km. northeast of Lake Habbema, *Brass 11531, 11532* (TYPE), alt. 2400 m., plentiful in forest substage (tree 8–10 m. high; flowers white; ripe fruit black, fleshy); 9 km. northeast of Lake Habbema, *Brass & Versteegh 10480*, alt.  $\pm$  2650 m., rare in forest substage (tree 25 m. high, 28 cm. diameter; bark gray-brown, fairly smooth; flower-buds white; young fruit green, ripe fruit violet).

In addition to the above we place here tentatively the following collection: *Brass & Versteegh 10467*, 9 km. northeast of Lake Habbema,  $\pm$  2750 m. alt., frequent (tree 31 m. high, 39 cm. diameter; bark black-brown; the outer wood light brown, the inner red-brown; young fruit green). This specimen differs from the rest in having drupes 10–11 mm. broad, 7 mm. high, in cupules 5–6 mm. diameter. In the type the remnant of the calyx-tube has a diameter of about 3 mm. Further, in *Brass & Versteegh 10467* most of the fruiting racemes tend to be below the leaves, although occasional ones appear on recent growth.

*Pygeum melanocarpum* falls very close to both *P. papuanum* Hemsl. and *P. brevistilum* K. Schum. It is easily separable from both by its smaller and obtusely acuminate leaves. It may also be distinguished from the first by its shorter inflorescence, and from the second by the almost complete lack of pubescence except on the inflorescence; the ovary is much shorter in proportion to the length of the style, and the drupe is a little smaller than in the latter. Koehne, in his key to the sections of *Pygeum*, Bot. Jahrb. **51**: 216. 1913, placed *P. brevistilum* K. Schum. under "ovarium pilosum."



**Pygeum costatum** Hemsl. Kew Bull. 1899: 98. 1899; Koehne, Bot. Jahrb. 51: 209, 217. 1913; 52: 339, 344. 1915.

BRITISH NEW GUINEA: Central Division, Mount Albert Edward, *Brass* 4221, alt. 3680 m., common in forest, forest borders, and fringes of glades (low tree 3–6 m.; stiff and often flat-branching; petiole and underside of midrib pale yellow-green; fls. white; fruit smooth, green). Type-collection from Mount Scratchley; reported also from Mount Wichmann.

The seed in this collection is practically glabrous; a few minute sericeous hairs are still present and the inside of the putamen is very sparingly sericeous. Possibly this condition would not have been present if the fruit had been fully mature.

**Pygeum rigidum** Koehne, Bot. Jahrb. 52: 339, 344. 1915.

NETHERLANDS NEW GUINEA: 9 km. northeast of Lake Habbema, *Brass* 10844, alt. 2600 m., common in forest undergrowth (tree 3 m. high; leaf-nerves more prominent on the upper surface; flowers white); *Brass & Versteegh* 10471, alt.  $\pm$  2750 m., rare in mossy forest (tree 21 m. high, 30 cm. diameter; bark black, rough; outer wood brown-yellow, inner red-brown); Bele River, 18 km. northeast of Lake Habbema, *Brass* 11315, alt. 2200 m., forest substage (tree 10 m. high; fruit black, fleshy); Balim River, *Brass & Versteegh* 11179, alt. 2150 m., low open forest on sandy slope (tree 11 m. high; flower-buds light green).

Although these specimens show some variation from each other as well as from the original description of *Pygeum rigidum* Koehne, it has seemed best to place them here until type-material is available for comparison. The leaves are 6–14 cm. long, 2.5–6.5 cm. wide, with the venation in some specimens very obvious, in others inconspicuous. The inflorescences of *Brass* 10844 and *Brass & Versteegh* 11179 seem not to vary greatly. In the first the inflorescence is 7–15 cm. long, minutely pubescent becoming glabrous with age; calyx-tube about 3 mm. long, glabrous within except at the base; sepals 5, 2 mm. long, narrowly triangular, obtusish; petals 5, 2 mm. long, ovate-oblong, obtuse; stamens about 30, anthers oblong, 1 mm. long; pistil 3.5 mm. long, ovary 1 mm. long, glabrous. The flowers of the second scarcely differ; they are slightly smaller, the sepals and petals tend to be somewhat irregular and sometimes occur in 6's.

*Brass & Versteegh* 10471 and *Brass* 11315 are fruiting specimens. The former has immature smooth fruit with a finely pubescent seed which, we suspect, becomes glabrous at maturity; the vegetative characters match those of *Brass* 10844 reasonably well. The second collection has mature fruit obviously reticulate and a glabrous seed. The lenticel-character, stressed in Koehne's description, which seems charac-



teristic of the other material discussed under this species, is not markedly a feature of this particular number. All these specimens ought to be compared also with *E. papuanum* Hemsl.

Perhaps not belonging to this species, but surely closely related, is another collection, *Brass & Versteegh 11952*, 15 km. southwest of Bernhard Camp, Idenburg River, rare on ridges in the primary forest, at 1900 m. alt. (tree 22 m. high, 33 cm. diameter; ripe fruit dark red). The leaves on the whole are smaller (4–8.5 cm.  $\times$  2–4 cm.), but it would not be easy to distinguish the largest ones from this species; the fruiting pedicel is 1 cm. long, the immature fruit is 10 mm. long, 13 mm. broad, and the young seed is pubescent (no mature fruit found).

**Pygeum dolichobotrys** Lauterb. & K. Schum. in K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee 340. 1900, Nachtr. 274. 1905; Koehne, Bot. Jahrb. **51**: 210, 211, 217. 1913; Diels, Bot. Jahrb. **57**: 427. 1922.

*Combretum flavo-virens* Lauterb. Nov. Guin. 8(4): 847. 1912.

BRITISH NEW GUINEA: Palmer River, 2 miles below Black River Junction, *Brass 7308*, alt. 100 m., common in ridge-forest canopy layer (tree  $\pm$  25 m.; trunk prominently and narrowly spur-buttressed; bark brown; wood pale, soft; flowers white, in numerous racemes axillary on short lateral branches; fruit white). Type from Northeastern New Guinea; also reported from Netherlands New Guinea and New Mecklenburg.

Our specimen has flowers with 25 stamens (in *Combretum flavovirens* Lauterb. which [fide Diels, l.c.] belongs to this species, the number of stamens is given as 10), and the base of the calyx-tube within is only sparsely hirsute around the base of the ovary.

**Pygeum pilinospermum** Koehne, Bot. Jahrb. **52**: 342, 345. 1915.

BRITISH NEW GUINEA: Middle Fly River, Lake Daviumbu, *Brass 7858*, substage tree of the rain-forest (bark brown, peeling in hard thin curled flakes; fruit white, immature). Type from Northeastern New Guinea. Endemic.

Possibly this species is also represented by the sterile collection, *Brass & Versteegh 13600*, Bernhard Camp, Idenburg River, 175 m. alt., frequent in primary rain-forest (tree 20 m. high, 39 cm. diameter; bark black; wood dark red-brown).

**Pygeum platyphyllum** K. Schum. in K. Schum. & Lauterb. Fl. Deutsch. Schutzgeb. Südsee Nachtr. 273. 1905; Koehne, Bot. Jahrb. **51**: 211, 219. 1913.

BRITISH NEW GUINEA: Central Division, Mafulu, *Brass 5292*, alt.



1250 m., lower primary forest (pendent racemes of cream-colored flowers, ♂). NETHERLANDS NEW GUINEA: 4 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 13137*, alt. 800 m., occasional in primary rain-forest of flood plain (tree 31 m. high, 52 cm. diameter; fls. white ♀, young fruit white, black when ripe). NORTHEASTERN NEW GUINEA: Sattelberg, *Clemens 146, 3204*, alt.  $\pm$  1000 m.; Yunzaing, *Clemens 6523A*, alt.  $\pm$  1500 m.

Our material closely resembles the Clemens collection from Sattelberg, the type-locality of this Papuan species. Staminate flowers subsessile or short-pedicellate, densely short-tomentose; calyx-tube hirsute within; stamens  $\pm$  25; pistil very short (1.5 mm. long), almost hidden in the pubescence surrounding it. Pistillate flowers (in bud) on pedicels 3 mm. long; ovary glabrous (rather than sparsely pilose as in Koehne's key to the subsection); mature fruit with minute ridges following the main branches of the reticulation of the putamen.

**Pygeum retusum** sp. nov. § *Sericospermum*.

Arbor humilis vel frutex, inflorescentia excepta glaberrimus; ramulis hornotinis fuscis, vetustioribus cinereis; stipulis caducis; petiolo 6–10 mm. longo; glandulis subtus juxta basim costae 4 vel interdum 2, accessoriis in superiore facie nullis; lamina e basi rotundata vel obtusa vel gradatim angustata elliptica, 3.5–6.5 cm. longa, 1.8–3.5 cm. lata, apice obtusa vel retusa vel emarginata; nervis utrinsecus 7–10 supra tenuiter impressis subtus prominulis, trabeculis reticuloque inconspicuis; racemis axillaribus, solitariis, 3.5–7 cm. longis, minute parceque pubescentibus dein glabratis; bracteis ante anthesin caducis; pedicellis 2.5–4 mm. longis; cupula turbinata, 2 mm. longa, 3 mm. lata, intus imo fundo tantum parce hirsuta; sepalis 5, obtuse triangularibus, circiter 1 mm. longis; petalis 5,  $\pm$  1.5 mm. longis, oblongis; staminibus  $\pm$  20, 3–3.5 mm. longis; filamentis glabris, antheris  $\pm$  ovatis, 0.6 mm. longis; pistillo 4 mm. longo, ovario glabro; drupis transverse ellipsoideis, 7 mm. longis, 10 mm. latis, glaberrimis; putamine reticulato; semine dense pubescente.

NETHERLANDS NEW GUINEA: Lake Habbema, *Brass 9035* (TYPE, fl. and fr.), alt. 3225 m., plentiful in mossy thickets of ridges (low gnarled tree  $\pm$  2 m. high; flowers dirty white, inconspicuous; fruit red); *Brass 9103*, alt. 3225 m., plentiful as a low tree or shrub on peaty ridges (flowers white); *Brass & Myer-Drees 10428, 10439*, at 3225 m. alt. (trees 8–9 m. high, 24–30 cm. diameter).

In general appearance this species suggests *Pygeum costatum* Hemsl. but has much smaller flowers and a densely pubescent seed.

A specimen superficially very like *P. retusum* is *Brass & Versteegh 10454*, 9 km. northeast of Lake Habbema, 2860 m. alt., common in



mossy forest (tree 19 m. high, 27 cm. diameter; bark dark brown, scaly; fruit green). It differs in that the young fruit has the immature seed and the inside of the putamen only sparsely pubescent. This, and the practically glabrous condition of the almost mature seed of *P. costatum* Hemsl. leads us to suspect this seed too will be practically glabrous at maturity. In *P. retusum*, on the other hand, the seed is densely pubescent both in the young and the nearly mature fruit. Possibly this number (*Brass & Versteegh 10454*) ought to be allied with *P. costatum* Hemsl.; yet it is readily separable from this by the somewhat more tapering base and  $\pm$  acutish apex of the leaves, and the shorter and more slender fruiting axes. Unfortunately the inflorescence is too immature to be of value diagnostically. Further material may prove it to be a good species.

**Pygeum Schlechteri** Koehne, Bot. Jahrb. **51**: 210, 217. 1913; **52**: 344, 345. 1915.

SOLOMON ISLANDS: Malaita, Quoimonapu, *Kajewski 2383*, at 300 m. alt., common in rain-forest on mountain-slopes (very large tree up to 30 m. high; fruit cream-colored when ripe, 1.5 cm. long, 1.8 cm. diameter); Guadalcanal Island, Ma Massa, Konga, *Kajewski 2483*, at 400 m. alt., common in rain-forest (medium-sized tree up to 20 m. high; fruit black-plum color, 1.4 cm. long, 1.3 cm. diameter); Uulolo, Tutuve Mountain, *Kajewski 2581*, alt. 1200 m., common in rain-forest (tree up to 15 m. high; fruit black when ripe, 1.4 cm. long, 1.8 cm. diameter).

*Pygeum Schlechteri* Koehne, hitherto known only from Northeastern New Guinea, was based on a specimen from a staminate tree. These three collections (in fruit) from the Solomon Islands agree so well with the vegetative characters given in the description of this species that we have determined them as such and here append a short description of the fruiting parts: inflorescence on last year's or this year's growth; axes of the racemes (3–8 cm. long), also pedicels (about 4 mm. long) and remnants of the calyx-tube (early deciduous or very narrow) densely hirtellous-tomentose, tawny; young drupes ovoid, pubescent, mature ones glabrate, transversely oblong, somewhat obtusish at the apex; seed-coat sericeous to glabrate.

Kajewski noted that nos. 2483 and 2581 are similar to a species occurring in Northern Queensland. Although the general habit of these collections suggests *Pygeum Turnerianum* F. M. Bail., the fruit of the latter is very much larger than that shown in the specimens from the Solomon Islands.

**Pygeum salomonense** sp. nov.

Arbor 6 m. alta; ramis laevibus, fuscis; ramulis fuscis, glabris, novellis



minute rufo-tomentosis, cito glabratis; stipulis in ramulorum apice locatis lineari-lanceolatis (6 mm. longis), pubescentibus, ceteris caducis; petiolo 1 cm. longo, minute pubescente; glandulis basalibus 4, minimis; secundariis nullis; lamina e basi fere rotundata vel subacuta elliptica, 17–23 cm. longa, 9–10 cm. lata, apice acuminata, novella adpresse pubescente vel praesertim subtus tomentosa, cito glabra, adulta glabra, subtus in costa nervisque minute pubescente ceterum glabra; nervis utrinsecus 10–12, supra tenuiter impressis, subtus prominulis, trabeculis undique parum prominulis, reticulo inconspicuo; racemis solitariis, axillaribus vel infra folia dispositis, 3–5 cm. longis, dense ochraceo-pubescentibus; axi gracillimo, 0.5 mm. diametro; bracteis lanceolatis, 2 mm. longis, interdum ad anthesin persistentibus; pedicellis 2 mm. longis; cupula subturbinata, 2–2.5 mm. longa, 3 mm. lata, intus imo fundo tantum hirta; sepalis petalisque  $\pm$  linearibus,  $\pm$  1 mm. longis; staminibus circiter 30, antheris 0.6–0.8 mm. longis; pistillo ignoto.

SOLOMON ISLANDS: San Cristobal Island, Magoha River, *Brass* 2727 (TYPE), August 25, 1932, at 50 m. alt., in riverbank rain-forest (tree 6 m. high with spreading top and smooth dark brown branches; leaves thin, dark, margins slightly recurved; flowers yellowish brown in color).

This collection suggests *Pygeum Schlechteri* Koehne but may be distinguished from the latter by the much larger leaves and the scanty pubescence of the vegetative parts.

### **Pygeum spec.**

NETHERLANDS NEW GUINEA: 2 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh* 13187, 750 m. alt., frequent in primary rain-forest on slopes (tree 30 m. high; fruit red).

This collection appears to be near *Pygeum dolichobotrys* Laut. & K. Schum. and *P. Forbesii* Koehne. It is a glabrous plant with very brittle leaves 9–13.5 cm. long, 4–7 cm. broad,  $\pm$  8-nerved; racemes up to 8 cm. long; drupes 15 mm. broad, 11 cm. high, glabrous with a glabrous seed. In the very young fruits one finds the ovary glabrous along with a minutely and sparsely pubescent remnant of the calyx-tube.

### PARASTEMON A. DC.

#### ? **Parastemon Versteeghii** sp. nov.

Arbor  $\pm$  34 m. alta, trunco  $\pm$  44 cm. diametro; ramulis novellis gracilibus puberulis vel glabris; foliis alternis, membranaceo-subcoriaceis, glabris, integris, lanceolatis ad lanceolato-ellipticis, 6–9 cm. longis, 1.5–3.2 cm. latis, basi in petiolum brevem (2–3 mm. longum) angustatis, apice obtuse acuminatis (acumine  $\pm$  0.7–1.3 cm. longo), nervis laterali-



bus utrinque 5–8 ante marginem arcuatis; stipulis minutis(?), caducis; racemis 4–5 cm. longis, axillaribus, folio brevioribus, puberulis vel minute pubescentibus; pedicellis 3–5 mm. longis; floribus parvis (circiter 3 mm. longis), albis; calycis tubo 1 mm. longo, intus pubescente, segmentis 5,  $\pm$  2 mm. longis, oblongis, ciliatis, sparse pubescentibus; petalis vix sepalis longioribus, ciliatis, extus sparse pubescentibus; staminibus (omnibus perfectis) 5, antisepalis, margine calycis tubi insertis; filamentis quam sepalis paullo brevioribus; ovario rotundato, 1 mm. diametro, 1-loculari; ovulis 2, a basi loculi collateraliter ascendentibus, minute pubescentibus; stylo basilari basi dense pubescente; stigmate bilobo (interdum cruribus recurvis inaequalibus); fructu (immaturo tantum) 1.2 cm. longo, oblongo, basi angustato et paullo obliquo, glabro.

NETHERLANDS NEW GUINEA: Bernhard Camp, Idenburg River, *Brass & Versteegh 13544* (TYPE), April 1939, alt. 100 m., frequent in primary rain-forest on the lower mountain slopes (tree 34 m. high, 44 cm. diameter, with thick black scaly bark and white flowers); 2 km. southwest of Bernhard Camp, Idenburg River, *Brass & Versteegh 13515*, March 1939, alt. 750 m., frequent tree of the primary rain-forest (28 m. high, 60 cm. diameter, with thick black scaly bark — sterile specimen).

This plant undoubtedly belongs to the CHRYSOBALANEAEE of the Rosaceae, and it appears to be more nearly related to *Angelesia* and *Parastemon* than to any other members of this group in the Malaysian region. As these genera have been defined, we believe it to be closer to *Parastemon* than to *Angelesia*, differing from the latter in having a basal style with a two-lobed stigma rather than a lateral one with a capitate stigma, a pericarp glabrous within rather than hairy, and only 5 stamens. *Parastemon* is usually defined as a plant with polygamo-dioecious flowers in which are two perfect stamens, the other three being rudimentary. The Papuan material differs in having perfect flowers with 5 fertile stamens and no rudimentary ones; nevertheless, the general aspect of the plant, the shape of the fruit (immature only), the basal style, and the pubescent ovules all agree with the characters of the genus *Parastemon*. Since, in the Rosaceae, the androecium shows much variability, for the present at least we have assigned these collections to *Parastemon*.

#### MELASTOMATACEAE

(FR. MARKGRAF)

#### **Medinilla nidularis** Markgraf sp. nov.

Fruticulus humilis epiphyticus glaber. Truncus abbreviatus. Folia opposita carnosae sessilia obovato-elliptica septuplinervia scabridula



glabra, apice acuminata, basi auriculata et collo stipulari foliaceo coniuncta, usque ad 20 cm. longa et 9 cm. lata. Inflorescentiae cymosae fasciculatae axillares, saepe cauliflorae. Flores tetrameri. Pedicelli 3–5 mm. longi. Bracteolae conspicuae lineares, 2 mm. longae. Calyx octo-costatus obconicus, basi truncatus, apice minute quadridentatus. Petala late semicircularia, breviter apiculata. Stamina 8 aequalia; filamenta brevissima; antherae acuminatae; connectivum basi antice minute bicuspidatum, postice obscure alatum, ala in calcar basale obtusum brevissimum protracta. Stylus brevis; stigma obscurum capitatum; ovarium glabrum quadriloculare multiovulatum, calyci plane accretum. Fructus baccati rubri globosi polyspermi, 4 mm. crassi. Semina nitida obconica.

BRITISH NEW GUINEA: Fly River Region, Palmer River, 2 miles below junction of Black River, epiphytic trunks, 100 m. above sea level, uncommon; flowering and fruiting, July 1936, *L. J. Brass 7057*, TYPE in the Arnold Arboretum.

#### APOCYNACEAE

(FR. MARKGRAF)

#### **Excavatia minima** Markgraf sp. nov.

Arbuscula gracillima fruticosa glabra, 3–4 m. alta. Ramuli graciles teretes. Folia ternata vel opposita, chartacea; petiolus 1 cm. longus; lamina obovato-cuneata, ad 9 cm. longa et 3.5 cm. lata, in petiolum longe angustata; nervi secundarii recti, angulo paene recto a costa oriundi, nervo marginali inter se coniuncti. Inflorescentiae in apicibus ramulorum axillares pauciflorae cymosae; pedunculus communis 5–6 cm. longus. Flores subsessiles, minute bracteati et bracteolati; lobi calycis ovati, quincunxiales, apice lacerati, intus glandulosi, 2 mm. longi, 1 mm. lati; tubus corollae 8 mm. longus, 1 mm. latus, infra faucem inflatus, in fauce constrictus; lobi oblongi, 6 mm. longi, 2 mm. lati, dextrorsum tecti, in basi sinistra auriculati; antherae ovatae, 1 mm. longae, filamentis brevibus infra faucem insertae. Stigma antheras vix attingens, e basi globosa conicum, biapiculatum. Stylus 5 mm. longus, a basi ad 2 mm. longitudinis bifidus. Ovarium conspicue apocarpum, biloculare, 1 mm. altum, in placenta valde prominula biovulatum. Fructus rubri, apocarpi. Mericarpium carnosum, ellipsoideum, marginatum, brevissime apiculatum, 1.5 cm. longum, 1 cm. latum, 8 mm. altum; exocarpium 1 mm. crassum, excavationes mesocarpium 3 mm. latae, 5 mm. longae, 12 mm. altae, endocarpium ligneum, tenue. Semen unicum, ellipticum, planum, 8 mm. longum, 5 mm. latum, 1 mm. crassum. Embryo 1.5 mm. longus, 0.5 mm. crassus.



BRITISH NEW GUINEA: Western Division, Tarara, Wassi Kussa River, common in undergrowth of rain-forest, flowering and fruiting, December 1936, *L. J. Brass 8512*, TYPE in the Berlin Herbarium, ISOTYPE at the Arnold Arboretum.

#### EXPLANATION OF PLATE I

Photographs of fruit-heads taken in the field by Mr. L. J. Brass.

Sketches of drupes and phalanges natural size.

- Fig. 1. *Pandanus brachyphyllus* Merr. & Perry. Syncarp.  
 Fig. 2. *The same*. Phalange in profile.  
 Fig. 3. *The same*. Phalange in longitudinal section.  
 Fig. 4. *The same*. Phalange from above.  
 Fig. 5. *Pandanus adinobotrys* Merr. & Perry. Syncarp.  
 Figs. 6, 7. *The same*. Drupes in profile.  
 Fig. 8. *The same*. Drupe in longitudinal section.  
 Fig. 9. *Pandanus atropurpureus* Merr. & Perry. Infructescence (spike of syncarps).  
 Fig. 10. *The same*. Drupes in profile.  
 Fig. 11. *The same*. Drupes from above.  
 Fig. 12. *Pandanus brosimos* Merr. & Perry. Syncarp.  
 Figs. 13, 14. *The same*. Drupes in profile (from two different angles).  
 Fig. 15. *The same*. Drupe in longitudinal section.  
 Fig. 16. *Pandanus concinnus* Merr. & Perry. Syncarp.  
 Fig. 17. *The same*. Drupes in profile.  
 Fig. 18. *Pandanus penicillus* Martelli. Syncarp.  
 Fig. 19. *Pandanus dolichopodus* Merr. & Perry. Phalange in profile.  
 Fig. 20. *The same*. Phalange from above.  
 Fig. 21. *The same*. Phalange in longitudinal section.  
 Fig. 22. *Pandanus leptocaulis* Merr. & Perry. Cluster of drupes in profile.  
 Fig. 23. *The same*. Cluster of drupes from above.  
 Fig. 24. *The same*. Drupe in longitudinal section.

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